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MEDICAL WORKS

OF

EDWARD MILLER, M. D.

LATE PROFESSOR OF THE PRACTICE OF PHYSIC IN THE UNIVERSITY OF NEW-YORK, AND RESIDENT PHYSICIAN FOR THE CITY OF NEW-YORK.

COLLECTED, AND ACCOMPANIED WITH

A BIOGRAPHICAL SKETCH

OF THE AUTHOR;

BY SAMUEL MILLER, D. D.

PROFESSOR OF ECCLESIASTICAL HISTORY AND CHURCH GOVERNMENT, IN THE THEOLOGICAL SEMINARY OF THE PRESBYTERIAN CHURCH IN THE UNITED STATES, AT PRINCETON, NEW-JERSEY.

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District of New-York, ss.

BE IT REMEMBERED that on the seventh day of May, in the thirty-eighth year of the Independence of the United States of America, (L. S.) THOMAS COLLINS, ISAAC COLLINS, and STACY B. COLLINS, of the said District, have deposited in this office the title of a book, the right whereof they claim as proprietors in the words following, to wit:

"*The Medical Works of Edward Miller, M. D. late professor of the Practice of Physic in the University of New-York, and Resident Physician for the city of New-York. Collected, and accompanied with a Biographical Sketch of the Author; by Samuel Miller, D D. professor of Ecclesiastical History and Church Government, in the Theological Seminary of the Presbyterian Church in the United States, at Princeton, New-Jersey.*"

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THERON RUDD,
Clerk of the New-York District.

PREFACE.

IN a few days after the decease of his Brother, the editor of the present Volume received a letter from Doctor RUSH, of which the following is an extract———

"I continue to sympathize with you in the loss of your excellent Brother, and my much loved Friend.———I wish you would collect and publish, in one Volume, all his original Papers, which lie scattered through the "Medical Repository," as well as his Inaugural Dissertation. They will be a valuable addition to the medical science of our Country, and are calculated to do much good. I will endeavour to write some account of his Life to be prefixed to the volume. It will be gratifying to me to be placed upon record with him in the libraries of America, and to appear before the public, and those who may come after us, as his friend."

It will readily be supposed that the opinion of such a Man had much influence in exciting the editor to the present undertaking. On consulting other Friends, who are entitled to his confi-

dence, he found them unanimously concurring in judgment with the venerable Professor of Philadelphia. Thus encouraged, he resolved, more than eighteen months ago, to enter on the task without delay. A variety of circumstances, however, with which it would be improper to trouble the public, have prevented the execution of his plan till the present time.

The reader will perceive, from the foregoing extract, that a Sketch of the Life and Character of Doctor Miller was promised by One "who touched nothing which he did not adorn." Had his invaluable life been spared, a memorial of his Friend might have been expected, far more interesting than even fraternal affection has been able to form. But, alas! this purpose, as well as others of much greater importance, was broken off by death. The editor, under the circumstances in which he was placed, felt constrained to undertake himself the melancholy task. With respect to the whole, he will only say, that if he had not considered the volume to which the attention and patronage of the public are now respectfully invited, as calculated, in some degree, to do good, he certainly would have forborne the agency which he has had in committing it to the press.

Princeton, N. J.
April 6th, 1814.

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ERRATA.

Page 47, line 15th, (of the Biographical Sketch) for *spareness* read *sparseness*.
Page 84, line 9th, do. for *Professional* read *Professorial*.
Page 92, line 14th do. for *stick* read *strike*.
Page 211, line 26th, for *portray* read *poetry*.
Page 229, line 4th, for *these* read *those*.
Page 292, line 7th, for *could* read *would*.

A

BIOGRAPHICAL SKETCH

OF

EDWARD MILLER, M. D.

BIOGRAPHICAL SKETCH, &c.

IF the writings of a deceased author be thought worthy of preservation and perusal at all, they will generally be read with more interest when accompanied with some account of his life and character. This is especially the case, when the character of the Man, if faithfully portrayed, instead of tarnishing the reputation of the Author, is rather calculated to increase its lustre.

If the writer of the present sketch had not believed that a correct portrait of his deceased Brother, would both give pleasure, and enhance the value of the succeeding sheets, he should, on various accounts, have shrunk from the mournful task of attempting to exhibit such a portrait. He is aware that, in undertaking to speak of so near a Relative, he stands on delicate ground. After

the most mature reflection, however, he cannot perceive any good reason, why the witness who of all others may be supposed to be best qualified on the score of a knowledge of facts, should be prevented from giving testimony. But he hopes in a great measure to escape the charge of partiality, by confirming his own testimony, for the most part, and especially in cases in which fraternal affection might be supposed likely to sway his judgment, by the testimony of other and more uninterested witnesses.

He will only further observe, by way of preliminary, that, if he be found, as he probably will be, in the following pages, especially where *medical* opinions and characters are in question, to express himself crudely or inaccurately, he hopes it will be recollected that he is no Physician; and that his time did not allow him, in the rapidity of composition, to consult a medical guide. He trusts, however, that no material misrepresentation will appear in the facts attempted to be recorded.

Edward Miller was a native of *Dover*, in the State of *Delaware*. He was born on the 9th of May, 1760. His Father was the Reverend *John Miller*, A. M., who for more than forty three years, sustained the office of Pastor of the Presbyterian church in *Dover*, and who died in the month of July, 1791, pious, faithful, and be-

loved. His Mother was *Margaret Millington*, daughter of *Allumby Millington*, Esquire, of *Talbot* County, *Maryland*, a woman of extraordinary prudence, piety and benevolence, who was removed by death about eighteen months before her husband.

Edward was their third son ;* and received the

* The eldest son was *John Miller*, who studied Medicine, and had engaged in the practice of his profession, in the neighbourhood of his Father, a short time before the commencement of the revolutionary war. In 1776, he entered the American army, as a volunteer surgeon ; and died, in the month of February, 1777, in the 25th year of his age, on his way from the military hospital in *New-Jersey*, to pay a short visit to his Parents.

The fourth son was *Joseph Miller*, who was bred a counsellor at law. He was engaged for a number of years in the successful practice of his profession, and was more than once a member of the Legislature of his native State. He died at *Wilmington*, in *Delaware*, of the Yellow Fever, in September, 1798, a few weeks after his marriage, and in the 34th year of his age.

The youngest son was *James Miller*, who was also bred to the Law, and who died of a pulmonary consumption, in *South Carolina*, whither he had gone for the benefit of his health, in the year 1795, just as he had concluded his studies, and was about to enter on the practice of the law.

These three Brothers were considered, by those who knew them, as men of superior talents. They certainly en-

early part of his education under the eye of his Parents. Under his paternal roof he spent the first fourteen years of his life; and here he imbibed, both from precept and example, that love of truth, those sentiments of humanity and benevolence, that candour, that prudence, that habitual respect for the feelings of others, and that mildness and gentleness of deportment, which distinguished him in so remarkable a degree throughout life.

His Father, who was an excellent Latin, Greek, and Hebrew scholar, commenced his instruction in classic literature. At about the age of fourteen, he was sent to a seminary which then enjoyed very high reputation, in the village of *Newark*, in his native State; and which, though not in name, was, in fact, a college. Here, under the direction of the Reverend Doctors *Francis Allison*, and *Alexander M'Dowell*, who were successively principals of the Institution, with the assistance

joyed, in a very high degree, the respect and confidence of their native State.

The *second* and *sixth* sons died in infancy. The *fifth* only survives.

Doctor *Miller* had two sisters. The eldest, Mrs. *M'Lane*, of *Philadelphia*, who survives him: the second, Mrs. *Lockerman*, afterwards Mrs. *Patten*, of *Dover*, who died in 1801.

of several other instructors, he devoted four years to the diligent study of the Latin and Greek languages, and went through the usual course of reading in the arts and sciences. He had, from very early life, a peculiar taste for the study of the classics. And being so happy as to fall into the hands of able teachers in this branch of knowledge, teachers who had themselves received instruction from the best European sources, his acquirements in Grecian and Roman literature were much more extensive and more accurate than are usually made in this country.

Having completed his academic course, in 1778, he entered on the study of medicine, soon afterwards, under the direction of Doctor *Charles Ridgely*, an eminent physician of *Dover*, who regarded him as a favourite pupil, and always treated him with peculiar and affectionate confidence.

He had been a little more than two years with Doctor *Ridgely*, when, in the autumn of 1780, fired with that patriotic ardour which he manifested till his latest breath; not at all discouraged by the loss of a beloved Brother, who, a little more than three years before, had fallen a sacrifice to the hardships of the revolutionary contest; and desirous, also, of enjoying the advantages for medical improvement, which a large military hospital peculiarly affords; he accepted the appointment

of surgeon's mate in the army of his country. In this capacity he served a little more than a year. This time was chiefly spent in the Hospital at *Baskingridge*, *New-Jersey*. Here with the venerable Doctor *Tilton*, with Doctor *Lattimer*, with Doctor *Rodgers*, all natives of his own State, and with a number of other respectable Friends, he passed through scenes which he often recollected and described, with peculiar interest and pleasure, in after life.

In the latter part of the year 1781, at the solicitation of some friends, he accepted the place of Surgeon on board of an armed ship bound to *France*. In this voyage, and in that country, he spent the greater part of a year. He carefully improved the opportunity which this visit to *Europe* afforded him, not only to acquire the French language, which he ever afterwards read and spoke with ease ; but also to make himself acquainted with, and to collect, some of the best books, and especially some of the best medical books, in that language. He found great advantages afterward, from having enjoyed and improved this opportunity, when Medicine, as a science, became more successfully cultivated in *France*, than it had been anteriour to the time of *Cullen* and *Brown*.

In 1782 Dr. *Miller* returned to his native country, and brought with him no small additions

to his stock of knowledge. In each of the two following winters, he attended regular courses of Medical Lectures in the University of *Pennsylvania*. It was during this period, that he commenced his acquaintance with Doctor *Rush*, who, more than any other individual, deserves to be styled "the Father of medical science in the United States;" an acquaintance which he highly prized, and which was afterwards matured into an intimate and endearing friendship. Here also, in listening to the able instructions of *Shippen*, *Morgan*, *Kuhn*, and others, he found his professional views every day expanded, and his information enlarged. For while he observed and thought for himself, and always attached much importance to *experience* in medicine; he, at the same time, had a deep impression of the value of able Instructors, and of well-constituted Medical Schools.

The treaty of peace in 1783, terminating, of course, his connection with the army and navy, he entered, in 1784, on the practice of his profession in the village of *Frederica*, a short distance from his native town in *Delaware*. A few weeks' residence, however, in that place, convinced him that the prospects of success there, were not such as he ought to think of accepting; and, after a very short trial, he removed in the same year, at the solicitation of some particular friends of the family,

to *Somerset* County on the eastern shore of *Maryland* Here, in a polished, wealthy, and hospitable neighbourhood, he spent rather more than two years, in lucrative practice, and in pleasant society.

But though comfortable with respect to emolument, and happy in the society of his friends, in *Somerset* County, there were two things which he earnestly desired, and after which he incessantly sighed. The peculiar tenderness of his filial and fraternal affection induced him to wish for a residence nearer to that of his Parents, and the other members of his family; and he was anxious to be placed in a situation which admitted of more easy and constant intercourse with *Philadelphia*, which, at that time, he regarded as the principal focus of medical information and improvement in the United States, and as the most convenient medium, within his reach, of communication with the European world. Doctor *Miller*, therefore, in the year 1786, when the lamented death of his Preceptor, Doctor *Ridgely*, and some other circumstances, opened better prospects there of success to a new medical practitioner than had for some time before existed, removed to *Dover*, and entered on the practice of his profession in his native place. Here his exemplary attention to professional duties; his devotedness to study; the character which he maintained for unsullied integrity and honour; the urbanity of his manners;

and his distinguished benevolence toward all who stood in need of his gratuitous services, soon conciliated public confidence, and introduced him to a practice which at an early period was extensive, and which continued to grow until he left the country.

Wherever Doctor *Miller* resided, it became, in a little time, apparent, to all who were on terms of intimacy with him, that *pecuniary* considerations held but a secondary place in his mind. He was ambitious of doing good. He was ambitious also of adding to the stock of knowledge in his profession, and of leaving it in a more improved state than he found it. Hence he not only sought with eagerness for all valuable publications on medicine, both ancient and modern; but he sought by close and accurate observation, and by carefully recording facts, as they occurred in practice, to increase the value of his own experience. Nor was he less careful to impart to others the result of his inquiries, and, by a comparison of observations and experiments, to render those results more definite and certain. Despising all the arts of nostrum-mongers and empirics, and open as the light of day to all whom he considered as deserving of his confidence; he was anxious to have every new doctrine and remedy subjected to the strictest investigation, and made as public as possible.

During Dr. *Miller's* residence in *Dover*, he was in the habit of visiting *Philadelphia* at least once every year. To this annual visit he was induced, not only that he might enjoy the pleasure of seeing his relatives there, toward whom he always manifested the most exemplary affection; but also that he might have an opportunity of personal and unreserved intercourse with some of the most illustrious Physicians then residing in the United States; that he might collect all the new medical and other valuable publications from abroad, which flowed into that literary emporium; and that the various articles of medical news, which his correspondents had failed of transmitting to him, might not wholly escape him.

In 1789, he received the degree of M. D. from the University of *Pennsylvania*. On this occasion he published and defended an Inaugural Dissertation, in the Latin language, *De Physconia Splenica*. He was induced to treat of that disease from the frequency of its occurrence in the sphere of his practice. The endemics of that part of the State of *Delaware* are Remittent and Intermittent Fevers; and an enlargement and induration of the Spleen, were so often the consequences of those protracted and debilitating diseases, that the subject naturally presented itself to his mind, as worthy of particular investigation. In the opinion of good judges, he has proved himself to be well ac-

quainted with this distressing and obstinate disorder. He differs from the Nosologists who view it as an idiopathic disease ; and contends that it is almost always induced by intermittent fevers. Hence he defines it to be " Febrium intermitten- " tium plerumque sequela ; tumor in regione " Hypochondrii sinistri exortus ; paulatim cres- " cens ; durus ; sæpe indolens ; nec sonorus, nec " fluctuans ; quandoque longe et late diffusus ; et " diutissime permanens." He supposes the proximate cause to consist in a sanguineous congestion, and languid circulation of the Spleen. And recommends the removal of them by the Peruvian bark, and other tonics, which are calculated to lessen the remote cause ; as well as by emetics, cathartics, mercury, electricity, iron, wine, the cold bath, exercise, friction, and change of climate. His observations on each of these remedies have been pronounced to bear the marks of enlightened and careful reflection.

While this Dissertation is a monument of his early and accurate acquirements in medical science ; it also affords an honourable specimen of his acquaintance with the Latin language. The statutes of the University of *Pennsylvania*, at that time, required all Inaugural Dissertations for the degree of Doctor of Medicine, to be written in that language. Doctor *Miller* found no difficulty in complying with this requisition. Instead of

writing his essay in English, and procuring it to be translated into Latin, by some literary jobber, as has been always but too commonly the case, even in European Universities, he is known to have written it originally in Latin. and wholly without assistance. And although the praise of a refined and elegant Roman style is by no means claimed for it; yet, when it is considered, that the author had been altogether out of the habit of writing Latin for many years before the date of this composition, it is presumed that every one who reads it will pronounce, that his early acquirements in that language could by no means have been of the slight or ordinary kind.

It was a short time after Doctor *Miller's* settlement in *Dover*, if the writer of these memoirs does not mistake, that the Medical Society of *Delaware*, received its first organization. In 1789, or 1790, the practice of delivering an Annual Oration before that body, by one of its members, was introduced. The *first* Oration was delivered, in one of the years above mentioned, by the subject of this sketch. It was received, at the time, with much and warm applause; and was originally intended by the Editor to have been introduced, among other articles, into this volume; but, to his surprise and mortification, no copy of it could be found, either among the author's papers, or in the State of *Delaware*.

In the year 1792, the Medical Society just mentioned, among other measures for improving medical science, and meliorating the state of their profession, proposed as a prize-question,—"The "origin and nature of that noxious power, which, "in hot and moist regions, excites intermitting "and remitting fevers, and the various distempers "which prevail during summer and autumn in "such situations; the mode of correcting this "infelicity of climate; and the means of pre-"venting and curing the maladies thereby induced?" This question was announced in the Latin language, and the premium offered to the successful candidate, was three hundred dollars.*

* "Omnibus ad quos hæc pervenerint, Salutem:

"Quantum medicinæ et humani generis intersit, morbos epidemicos, in regionibus calidis paludosis, æstatis et autumni tempore, grassantes eorumque causas adhuc usque obscuras, plenius explorare et detegere, satis novit quisque in rebus medicis vel minimum versatus. Magna pars orbis terrarum, eæque præcipue regiones, quæ benignissimis Divini Numinis alioqui replentur muneribus, hac ex causa acerbissimis ærumnis et vastationibus miserrimis quotannis objiciuntur. Et tuto fortasse affirmari possit, ex omnibus morborum fontibus fere nullum esse, hoc longe lateque diffusiorem vel qui majora corpori humano infert mala.

"Argumentum hocce, medicorum et philosophorum attentioni vastam et fertilissimam investigationis provinciam ostendit, ubi tot magni nominis viri non sine laude semet exercuerunt; sed ubi multum adhuc restat operis, multum-

It is well understood, that Doctor *Miller* was among the most zealous and active members of the Society at this time; that he was of the number of those who prompted and aided in all its

que diu restabit; nec unquam fortasse aliquid indies adjiciendi præcluditur occasio. Difficultates quidem undique premunt, et ad lucem rei adeo obscuræ offundendam, multis, iisque accuratis observationibus et ratiocinatione cauta admodum et sobria opus erit. Suus sic quidem cuique labor erit, sed et suæ simul cuique constabunt bene meritæ laudes. Nequaquam enim est fide dignum, naturam tam arcto limite ingenium humanum compescuisse, ut ad has quoque regiones utcunque cæcas atque occultas viam sibi nunquam patefaciat.

" His rebus perpensis, simulque commodis magnis et plurimis, quæ ex præmiis et honoribus publice propositis redundare solent, probe consideratis, Societas Medica Delavariensis, symbolam quoque suam ad scientiæ acervum confere cupiens, quæstionem sequentem proponere, et auctorem dissertationis præstantissimæ præmio remunerare, decrevit.

" *Quænam est Potentia nocens, ejusque origo atque natura, unde in regionibus calidis, iisdemque humidis, Intermittentes oriuntur Febres, Remittentes etiam, variaque alia mala, quæ æstatis et autumni tempore grassari solent? Qua ratione hoc cœli vitium corrigi possit? Quo pacto, quibusque auxiliis istiusmodi morbi arceri atque tractari debeant?*

" Ex iis qui præmium illud obtinere cupiunt, hoc potissimum et necessario exigitur, ut rationes atque auxilia sedulo explorent, quibus hoc cœli vitium facillime corrigi possit.

" Hujus propositi hæ sunt conditiones.

laudable enterprises; and that he drew up with his own hand the Program which exhibited the prize-question above mentioned. No answer to this question, deemed worthy of the premium, was ever received.

" 1. Dissertationem suam Anglice, Latine, Gallice aut Germanice conscriptam mittendam curabit auctor ad Societatis Præsidem, in diem Martis secundam mensis Maii, anno 1795.

" 2. Epistola insuper ab auctore mittenda est, nomen suum domiciliique locum indicans, eodemque sigillo, ac ipsa dissertatio munita, cum nota etiam qualibet, parti superaddita exteriori, quæ alteram dissertationi præfixam referat.

" 3. Dissertatio antea evulgata, aut alibi præmio donata, hoc digna certamine non censebitur.

" 4. Dissertationem præmio donatam, sub quacunque forma, jus evulgandi, penes Societatem esse, semper intelligendum.

" 5. Nisi autem præstantissima et præmio dignissima dijudicata fuerit dissertatio, ad auctorem quocunque placuerit remitteretur, una cum epistola intacto sigillo. Vel si de hoc parum solicitus fuerit auctor, epistola comburetur, et dissertatio penes Societatem manebit.

" 6. Si ex dissertationibus Societati oblatis, nulla digna habebitur, quæ tali honore condecoretur, harum auctores certo sciant, præmium futurum esse nullum.

" 7. Præmium ex Thaleris trecentis (Anglice Dollars) vel ex

In the year 1793, when the *Yellow Fever*, that frightful disease, which has since made so much havoc in the principal cities of the United States, first prevailed to any alarming extent in *Philadelphia*, the medical controversy respecting its *origin*, began to attract general attention in this country. Doctor *Miller*, though then residing in *Dover*, and, of course, considerably removed from the centre and heat of the battle, was by no means inattentive to its nature or its progress. He, at that time, from the best comparison of testimony on the subject which he was able to make, decided in favour of the doctrine of *domestic origin*, and wrote a long and interesting Letter to Doctor *Rush*, stating his views, and the grounds of his opinion. This letter was afterwards published in most of the American newspapers, and drew from the illustrious Man to whom it was addressed, the public declaration, that he considered its author as "second to no Physician in the United States."

argento fusili ejusdem pretii prout auctori visum fuerit constabit, quod sibi ipsi vel cuivis amico ex ejus mandato, intra sex menses, dijudicatione facta memorabitur.

"Dabam hæc ex Societatis jussu, in lucem edita Doverii apud rempublicam Delavariensem, die quarto Julii anno Domini 1792.

"EDVARDUS MILLER, M. D.
Societatis Sodalis, ejusdemque a Secretis."

It was in the year 1796, that Doctor *Miller* removed to *New-York*. It is with mournful pleasure that the writer of this sketch recollects his own agency in inducing his lamented Brother to make this removal. The malignant epidemic of 1795, had removed by death a number of Physicians, whose characters were respectable, and whose medical practice was large. At the close of that awful visitation, when health was restored to the city, and when new plans began to be formed to fill up the chasms which death and desolation had made, the writer, then residing himself in the city, began to turn his eyes toward a Brother whom he tenderly loved; whose company he never entered but with improvement; and from whom he had long lamented his separation. In the month of November of that year, he proposed to him, and urged, an immediate removal to *New-York*. Doctor *Miller* received the proposal in the most affectionate manner; but, with that delicacy and prudence, for which he was always remarkable, he thought himself bound, before deciding, to consult such members of the Faculty in *New-York* as he numbered among his Friends. He, accordingly, addressed letters to Doctor *John R. B. Rodgers*, and Doctor *Mitchill*, on this subject, frankly explaining his views, and soliciting their judgment in the case. Their replies were such as might have been expected from enlightened and liberal friends, who felt disposed to encou-

rage a professional brother. He determined to make the experiment; immediately entered on the adjustment of his concerns in *Dover;* and in the month of September, 1796, found himself fixed in *New-York.*

His success in this city was much greater, and, particularly, more speedy, than he had anticipated. Among the many practical and instructive maxims which the writer of these pages has had the privilege of receiving from the lips of his lamented Brother, and which he now recollects with mingled emotions; one, often repeated, was, that no professional man can, ordinarily, expect to succeed in life, without obtaining the general respect and confidence of his professional brethren. He thought that this remark applied to all the learned professions with peculiar force; that Divines, Physicians, and Lawyers are, generally, held in a degree of estimation by the mass of their fellow-citizens, proportioned to the degree of that which they enjoy among those of their own corps. His own character and history certainly went to the verification of this maxim. His medical brethren in *New-York* soon discovered that he was worthy of their confidence, and they gave it to him. This itself was a guarantee of a considerable portion of professional practice. Accordingly his business soon became such as to afford him an ample sup-

port; and continued to become more and more extensive until his death.

Soon after his establishment in *New-York*, Doctor *Miller* became a member of a literary association, which had been for some time known to those who participated in its pleasures and advantages, by the unostentatious name of "the Friendly Club." The meetings were held in rotation at the respective houses of the members, on the Tuesday evening of each week. Of this association, one of its members speaks in the following terms.* "Never was a place of appointment, of this nature, repaired to with greater avidity, or the pleasures of unshackled intellectual intercourse more highly enjoyed. All form was rejected by the "friendly club," and but one rule adopted, which was that the member who had the pleasure of receiving his friends at his house, should read a passage from some author, by way of leading conversation into such a channel as might turn the thoughts of the company to literary discussion or critical investigation. This was, for the greater portion of the time it existed, truly a "friendly club;" but after a continuation of most perfect and cordial communion for a few years, the demon, whose infuriated and blasting influence is unceasingly exerted to mar the blessings of our envied country, party-politics, found

* Monthly Recorder, vol. I, p. 8, &c.

his way among the " friendly club," and the institution died a lingering death. Yet I believe the surviving members feel a brotherly affection towards each other, and a regretful remembrance of those days, the more endearing as the knowledge that they can never return becomes more impressive, from the ravages of time and the unsparing strokes of death."

" The associates of Dr. *Miller* at this invaluable period, the first years of the club, were *William Dunlap*, then manager of the New-York theatre; *James Kent*, then recorder of the city, and now chief justice of the state of *New-York; Anthony Bleecker*, attorney and counsellor at law and master in chancery; *Charles Brockden Brown*, the author of Wieland; *William Walton Woolsey;* Doctor *Elihu Hubbard Smith; George Muirson Woolsey;* Doctor *Samuel Latham Mitchill; John Wells*, attorney and counsellor at law; *William Johnson*, attorney and counsellor at law, and reporter to the supreme court of the state of *New-York;* and the reverend *Samuel Miller*, D. D. Of this " little band, this band of brothers," *Edward Miller*, *Elihu Hubbard Smith*, and *Charles Brockden Brown* are now no more."

In the autumn of 1796, Doctor *Elihu H. Smith*, (then a practitioner of medicine residing in *New-York*, and a man whose social character was as amiable, as his understanding was vigorous, and

his acquirements rare,) conceived the project of a Periodical Publication, to embrace medicine, and all the departments of knowledge connected with it. He communicated this plan to his friend, Doctor *Miller*, and having obtained his approbation of it, they jointly laid their design before Doctor *Mitchill*, who had not long before returned from his studies and travels in *Europe*, and who has since so much signalized himself, as a friend and promoter of science, and as a member of the national Legislature; requesting him to unite with them in the execution of the plan. The failure of many magazines, and other periodical publications in the United States, and the difficulty of circulating such works in a country like ours, were discouraging circumstances which did not fail to occur in deliberating on the subject. There was reason to fear, from the contemplation of many former examples, that both public patronage, and materials for filling the pages of the projected work, would both be soon exhausted. But, notwithstanding all these discouragements, Doctor *Mitchill* agreed to unite with his friends, and the triumvirate determined to proceed in the enterprise. About the middle of November, in the year above mentioned, a *Circular Address* was laid before the literary and medical public of the United States; and the plan pursued with so much vigour and success, that, in the beginning of August, 1797, the first number of the MEDICAL REPOSITORY made its appearance.

As the commencement of that Publication undoubtedly forms an æra in the literary and medical history of our country, it may not be improper to lay before the readers of the present volume, entire, the *Circular Address* which ushered in the *Medical Repository*, and which was followed by so large, important and useful a work. It will probably serve to give those who shall peruse it, a new impression of the enlarged views, the ardent zeal, and the active industry of the original Editors of that work.

"After a continued struggle of many centuries, against the absurd systems of ancient physicians, and amid the difficulties repeatedly opposed to the progress of Medicine by modern hypotheses, scarcely less preposterous, it has at length become established as a fundamental truth, that though conjecture may precede experiment, facts are the only rational basis of theory. Philosophers are no longer permitted to descend from generals to particulars, shaping them according to preconceived notions of their intimate relations; but are expected to proceed by a rigid examination and cautious assemblage of particulars to every general inference. This laborious process of reasoning, so favourable to truth, and so little flattering to indolence, to vanity, and to a creative fancy, requires the possession of an extensive mass of experiment, a various and judicious selection of facts;—not only for him who would overthrow or construct a

system, but for every one who would rightly exercise the art to which they belong. And in proportion as these sentiments have gained ground among physicians, systems of Physic have lost much of their value; and Collections of Histories and Observations, whether the work of a single, or of many hands, have gradually obtained a high consideration and authority in the schools of medicine, as well as in the closets of practitioners. For, whatever advantages may have been temporarily derived from certain celebrated theories, it is chiefly by the new spring which they have given to the mind, and by the more accurate investigation of natural phenomena to which they have excited others, that they have been permanently useful. Our knowledge of nature is too limited, our collection of materials too scanty, to enable even the most diligent and ingenious to frame a correct theory. Medical collections, therefore, are still necessary, and must long continue to be so; and as they are free from the incumbrance of systematized hypothesis, the opinions they contain, for the most part, spring more naturally out of the facts on which they are founded, are thus less likely to mislead, and even though erroneous, as they maintain no intimate connection with an extensive scheme, still leave us, in the facts themselves, the surest guides amidst the intricacies of practice."

" Publications of this kind, likewise, from their very nature, possess many advantages over systematic works. They employ a greater number of observers, over a wider field, admit of minuter details, ampler discussions, and more various opinions and recondite investigations. By their instrumentality, facts are preserved or rescued from oblivion, which, without them, had been wholly lost : for there are few men who find leisure and inclination, from the pressure of daily business, to become authors, and still fewer whose observations are so numerous and important as to demand a laboured treatise ; while there are many who have time and facts to furnish out, almost every year of their lives, a short but valuable essay. And if to these arguments, in favour of Medical Collections, drawn from the nature of the works, it may be permitted to add others from the practice of other nations than our own, the example of almost every civilized country of Europe may be cited; in which publications of this kind are successfully multiplied, and sought after with peculiar avidity. But, notwithstanding the many obvious benefits resulting from them, such undertakings, in the United States, have been few, and feebly prosecuted. And this is the more to be lamented, as no country in the world is so capable of giving permanent utility to such a design. For, beside those advantages which we possess in common with other nations, there are numerous others of new

and peculiar importance. These exist in our extensive territory ; in the variety of its soil, climate, elevation, and aspect ; in the varied descent, population, intermixture, institutions, manners, and consequent diseases of its inhabitants ; in the opportunities it affords of observing and estimating the effects of old and new settlements, of gradual and rapid changes in the face of a country, of agriculture, commerce, and navigation, of the savage, civilized, and intermediate states of society ; of comparing the diseases or phenomena, of each disease, and the operation of the same remedies, in the same or different complaints, in Europe and America ; in the general diffusion of knowledge, and turn for observation, among all classes of its citizens ; and, finally, in the sameness and perfection of their language—an advantage possessed in the same degree by no other people.—These are privileges which should prove so many powerful incentives to medical industry ; which should inspirit the exertions of physicians to give that importance, in a professional view, to their country, which, fertile as she is in occasions, she loudly calls for at their hands."

" The present time seems particularly favourable to such attempts. The distressing events which have been so recently witnessed, in various parts of our country, have awakened the curiosity of others, as well as of physicians ; and while they

have quickened the zeal and observation of the latter, have excited the eager apprehensions of all. This has created an uncommon interest, in respect to medical opinions, among the people at large, and especially since the belief of the domestic origin of certain diseases has been considerably disseminated. The partial success of a late benevolent attempt, of the kind now referred to,* is rather encouraging than disheartening; since its failure is attributable to causes not necessarily connected with the design, and since there is good ground to believe, that a little perseverance would have given it stability and reputation.—To the success of such a publication, much time, as well as the concurrent exertions of many observers, were indispensable. The field of inquiry, likewise, was comparatively narrow; and too much reliance was, probably, placed on public solicitation, with so limited a time for the collection of materials."

"Influenced by considerations, and invited by views, which we have now unfolded, and shall consequently enlarge upon, we have ventured to project a work such as we have recommended, and thus publicly to solicit your assistance in its execution. And we request you to furnish us, either quarterly, semi-annually, or annually, as

* Mr. Webster's Collection, relative to Bilious Fevers, &c.

may best suit with your convenience, with such information, relative to all or either of the following particulars, as may be in your power.

" 1. Histories of such diseases as reign in your particular places of residence, at each and every season of the year ; including the time of their appearance and disappearance ; the peculiar customs and manners, and food of the people ; local peculiarities, (not merely those of the town or village, but of the immediate residence of the sick,) preceding, contemporary, and subsequent complaints ; symptoms, progress, extent, method of cure, mortality, and what proportion of either sex, and of different ages, are affected :—in sea-ports, attention to be paid to supposed sources of importation, and to the arrival of foreigners ; in new settlements, to changes in the face of the country, by clearings, drainings, &c. and to the increase of population, by emigration and otherwise."

" 2. Histories of such diseases as appear among *Domestic Animals*—such as horses, cattle, sheep, &c.—their causes, symptoms, method of cure, &c. &c."

" 3. Accounts of *Insects*—whether any uncommon dearth or numbers of them ; whether

troublesome or noxious to men, beasts, or vegetables ; with as accurate and minute notices as may be of their derivation, mode of propagation, nature and extent of such ravages, or other evils, as they may occasion ; of their appearance and disappearance, and of the means, if any, of guarding against or destroying them."

" 4. Histories of the progress and condition of *Vegetation*—with regard to growth, vigour, and disease ; independent of the ravages of insects ; but marking the influence of manures, and the local situation, both as to elevation and soil, air and water."

" 5. The state of the *Atmosphere*—in respect to dryness and humidity, heat and cold, serenity and tempestuousness ; including the direction and force of winds, and the sensible quantity of electricity."

" Where information relative to these various topics of inquiry can be given in a connected form, it will be most acceptable ; and the more minute and precise, the more useful will it be. But general and distinct communications are earnestly requested, where more extensive and combined intelligence cannot readily be afforded."

" The outline now traced, gentlemen, will enable you to form some idea of the nature, extent, and importance of the work, in the prosecution of which we solicit your co-operation. The benefits which may result from such a publication, if vigorously and judiciously executed, are too numerous and considerable not to be suggested by the slightest reflection. Were it to be ably and completely prosecuted, it could scarcely fail, even in a few years, of leading us to a near view of the origin and causes of general, or febrile diseases; to the discovery of what situations, climates, and seasons, most favoured their production; of the order and rapidity of their progression, from one place to another, in the same or different countries; and of the most successful method of cure, as well as of prevention. Aided by a work composed of materials collected with such care, and drawn from so many and so distant quarters, we might be enabled to determine the relative healthiness of places; the causes why some were favourable and some unfavourable to health; their peculiar diseases, with the means of their removal and extirpation.—No plan seems more happily calculated to mark and explain the influence of different states of society, occupations, institutions, manners, exposure, air, modes of living, &c. &c. on health; and thus, indirectly, on morals, industry, and happiness: none more happily, for resolving the hitherto unexplained and difficult

problem, proposed by the illustrious *Sydenham*,*—"whether a careful examination might "*not* shew, that certain tribes of disorders con- "stantly follow others, in one determinate series, "or circle, as it were; or whether they all return, "indiscriminately, according to the secret dis- "position of the air, and the inexplicable succes- "sion of the seasons." Nor is the solution of this problem of small importance; since, in the first place, were it discovered that general diseases pursued a regular course, we might thence be prepared to receive and counteract them; or, were it determined that they depended on the qualities of the atmosphere, we should be directed to the proper object of investigation, and thus be well advanced towards a knowledge of their causes. But, whatever may be true in respect to the systematic succession of diseases, hinted at by *Sydenham*, it is certain that an apparent progress of a particular disease has sometimes been observable in the United States; as though the morbid principle possessed the power of assimilating the atmosphere to its own nature, agreeable to determinate, but inscrutable and peculiar laws: sometimes rapidly extending, as in the *Influenza;* sometimes slowly, as in *Scarlatina*. It is perhaps difficult rightly to appreciate the benefits which the determining of a single

* Wallis's Sydenham, vol. i. p. 6.

point like this would confer on medicine; (whether by quieting apprehensions of such an extension of a disease, if indeed there were no reason to fear it; or by putting us on our guard, if such were clearly proved to be its nature)—but, whatever they may be, no method seems better adapted for ascertaining the fact, than by a publication like the one now proposed. By this means, the inquirer will be presented with a regular history of the progress of such a disease, from one extremity of the continent to the other; and be able to mark its effects in all the varieties of people, climate, and season; or, if it appear in several places, obviously disconnected, at the same time, of comparing the circumstances in which they resemble each other, and thus of determining its causes.—But, not to dwell longer on the recommendations to such a work, we may ultimately remark, that, when thus completed, the volume of every year will form the history of the health of the United States for the year preceding: a single glance of the eye will be equal to perceive what diseases prevailed at the same time, in all the intermediate situations, from St. Mary's to St. Croix, and from the Mississippi to the Atlantic; and individual experience, as well as new discoveries, will be propagated with unexampled benefit and celerity, to every part of the United States."

"When we consider the extensive plan now

proposed, the number of persons, and the time required for its execution, and the difficulties which always attend every work of the kind, we should indulge a presumptuous and reprehensible expectation, did we look to see it speedily and completely carried into effect. But, notwithstanding all reasonable allowance for impediments of this sort, we flatter ourselves that such materials may be collected, from time to time, as will enable us to present annually an acceptable volume to the public; while the great object of our proposed inquiries, as already explained, will gradually acquire consistence and patronage."

"To the end that such a volume may be readily and regularly published, we have thought it advisable to add the following subjects, to those already proposed, concerning all of which we would request information."

"1. Accurate and succinct accounts of the general diseases which have formerly prevailed in any part of the United States."

"2. Useful histories of particular Cases."

"3. Histories of such complaints of professional men, mechanics, manufacturers, &c. as appear to originate from their peculiar employments, or the materials with, or about which they are employed."

"4. New methods of curing diseases."

"5. Accounts of new-discovered or applied remedies, in rare or hitherto incurable diseases."

"6. Extracts from rare, printed or manuscript, works, illustrative of the nature and cure of such diseases as now prevail in the United States."

"7. Interesting information, relative to the minerals, plants, and animals of America."

"8. American medical biography."

"9. Accounts of former American medical publications."

"10. Reviews of new American medical publications."

"11. Medical news."

"It will be obvious to every one, that the variety of subjects comprehended in this undertaking, will put it in the power of almost every other class of citizens, as well as of physicians, usefully to aid in its execution: and as the benefits which may result from its success are limited to no description of men, we are the more encouraged to solicit

assistance from all whose situations enable them to afford it. We address ourselves, therefore, not to physicians only, but to men of observation, and to the learned, throughout the United States."

"With respect to the mode of publication, we have not yet decided, whether to print an octavo volume annually, or to distribute the same materials into four quarterly numbers, equal to such a volume. This must be determined, in good measure, by the regularity and readiness with which we are supplied with suitable materials: and by those superior advantages for circulation which, after proper inquiry, one form shall appear to possess over the other. But, whichever may be preferred, seasonable notice will be given, and a subscription will be opened to defray the expense, when we are ready for publication; and, in the mean time, it is desired that all communications may be addressed to"

"SAMUEL L. MITCHILL."
"EDWARD MILLER."
"E. H. SMITH."

"*New-York, Nov.* 15*th*, 1796."

This appeal to the good sense of the medical profession, and to the patronage of the public, was not made in vain. It was the forerunner of a Work which has continued for sixteen years, and consists of as many annual volumes. Doctor

Miller lived to see the 59th quarter-yearly number in the press; or, in other words, to see fourteen volumes, and three-fourths of the fifteenth, completed.

This work consists of *four* departments. The *first*, embraces Original Tracts or memoirs, on medical subjects, or the auxiliary branches of science. The *second*, Reviews of such publications as come within the province assigned to themselves by the Editors. The *third*, Medical and Philosophical Intelligence. And the *fourth*, which was only occasionally subjoined, was a supplement, or appendix, containing such papers and tracts, not original, as were deemed worthy of a place on account of their intrinsic merit, and the danger of their being lost on the diurnal sheets of the times.

The contributions to the pages of this work, from all quarters, were unexpectedly liberal. The diligence of the conductors was incessant and unwearied. From all sources, foreign and domestic, they gathered materials. These accumulated under their hands to an exuberant amount: insomuch that, if the Editors had thought proper, the Medical Repository might have been continued purely as an American Journal, without borrowing even a paragraph from any transatlantic publication. But as their object was the promotion

of general science, and especially the diffusion of every thing connected with medical improvement, from whatever quarter it might be derived, throughout the States and Territories of *North-America*, they freely selected, from the foreign prints, such articles as, from their novelty and interest, most deserved attention. Their zeal in establishing an extensive correspondence, and their success in obtaining early intelligence, were remarkable. As an example of this, it may be stated, that Dr. *Jenner's* first publication on the *Cow-pox* was announced in the Medical Repository in a few weeks after its appearance in *Great Britain;* and in a short time afterwards the vaccine matter was received by Doctor *Miller*, from his correspondent, Doctor *Pearson*, of *London*, and introduced into *New-York*.

The Medical Repository, thus constituted, and so long continued, is, in fact, a medical library, which every student and practitioner of medicine, and, indeed, every man of liberal curiosity in the United States, ought to possess. It comprehends the history of the *endemic* and *epidemic* diseases of our country, especially of that dreadful scourge of our principal cities, from 1793 to 1806, the *Yellow Fever*. It records all important discoveries in *Natural History*. It notices, with particular care, Physical Geography, in its curious and useful progress. It exhibits the discoveries

and revolutions in *Chemistry*, with minute exactness. To all these are added, articles almost numberless, of inquiry and intelligence, on every subject allied to the great departments before stated. In short, it may be considered as a faithful record of every discovery and improvement in medicine, and the auxiliary branches of science, and of every American work on these subjects, which the Editors deemed worthy of notice, for the last sixteen years. If the fastidious critic is sometimes ready to smile at the introduction of some articles, which do not seem appropriately to belong to such a work, he will find a ready apology, in the considerations, that we live in a country in which, from the extent, and spareness of its population, the circulation of many periodical works is difficult; that a variety of tastes are to be consulted; and that the division of literary labour has not yet made such progress in the United States, as may be expected in time to come.

From this work, as a parent stock, have sprung a number of works, of a similar kind, in *Europe* and *America*. It is not recollected, by the writer of these sheets, that any periodical publication, devoted to medicine and medical philosophy, that could be said to be of the same nature with the Medical Repository, had ever before appeared. The *Medical Commentaries*, of Professor *Duncan*, of *Edinburgh*, were, in many respects, very dif-

ferent. The *Medical and Physical Journal*, of *London*, was commenced soon after the appearance of the Medical Repository, with the avowal of its Editor, that he took the hint from *New-York*. Other editors in *London*, *Paris*, *Edinburgh*, and *Bremen*, in a short time started similar journals; while rival and learned publishers in *New-York*, *Philadelphia*, *Baltimore and Boston*, have been excited to exertions of the most respectable kind, from which there is no doubt that highly valuable results have accrued. To the Medical Repository, it may be said to be directly or indirectly owing, that the physicians of the United States have been so early and so extensively combined into a corps of observers and writers, on subjects appropriated to their profession; that many respectable practitioners, have been prompted to inquiries and publications of great value, which would, probably, never have been thought of, but for this Work and its literary offspring; and that a taste for medical investigation and improvement has been, for a number of years past, so conspicuously and rapidly advancing in the United States.

Dr. *Miller* was of the opinion that there is no science in which *America* has made more progress than that of medicine, and none in which she holds a more complete independence of the European world. It is, indeed, true, that the physi-

cians of this country were originally indebted to their preceptors in *Europe*, for the elements of most of that knowledge, which they have since so successfully laboured to simplify, improve and extend. It was natural to suppose, as so many of the most distinguished members of this profession had received their education beyond the Atlantic, that they would remain fixed in the trammels of early instruction, and refuse to listen even to the evidence of facts, when found not to coincide with the principles which they had deeply imbibed. Much of this implicit reliance upon transatlantic authority has, doubtless, been observed; but it is equally true that *America* may boast of much free inquiry, and of much bold and successful improvement. This hemisphere is the theatre on which the prejudices and errors of the European schools, in a great variety of instances, have been refuted and abandoned, and on which new principles in medicine have been proposed, ascertained, and completely established. In support of this assertion it would be easy to adduce not only the facts concerning American physicians who have been educated in *Europe*, and returned to their native country; but those, likewise, of European physicians going, in various capacities, to reside in the West-Indies. Are diseases on this side of the globe more gigantic in their nature, more marked and incapable of disguise in their features, than in the land of our

ancestors? or to what else are we to attribute this effect?

It would exceed the proper limits of this digression, and would appear unbecoming in the writer, who has no claims to medical science, were he to enter into any discussion of the conflicting opinions of American and European physicians, or of American physicians among themselves. But he has been accustomed often to hear One, who was by no means an inactive member of that profession, and who was far from being a careless observer, express himself so strongly concerning American enterprise and improvements in medicine, that he cannot forbear cursorily to state his views of the subject.

He thought that medical science in *America* might justly claim the merit of real discoveries, and solid improvements in the following particulars. A more simple and correct doctrine concerning the radical and universal relations of diseases. A more rational and practical estimate of Nosology, the importance of which he thought had been greatly overrated in *Europe*. More just, accurate and consistent opinions concerning the origin and causes of epidemic and pestilential diseases; according to which the notions of their importation and exportation from one country to another are rejected, and the doctrine of their do-

mestic origin satisfactorily established. More correct principles on the subject of quarantine, which might diminish the restrictions and burdens of commerce, and render the intercourse of nations more hospitable and humane. And a more extensive acquaintance with the medicinal virtues and uses of many articles of the vegetable kingdom.

Among many particular diseases and remedies, the management of which has been improved in the United States, he thought the following might be selected with great confidence. A more simple and efficacious treatment of *Malignant Fevers;* a more correct theory and practice in *Dropsy*, particularly in that of the *Brain;* a more discriminating, decisive, and successful employment of *Bloodletting* in fevers; and a more extensive and efficacious use of *Mercury* in a variety of diseases. It need scarcely be added, that, to a mind so eminently patriotic as his, and with so ardent a zeal as that which he possessed in favour of every thing which had the aspect of improvement in the arts and sciences, and especially in that science to which he was more particularly devoted, the enterprise and progress in this science which he thought he discovered in his own country, were peculiarly gratifying; and that he was animated with the thought of contributing himself, in some

degree toward the advancement of so interesting a cause.

But to return to the Medical Repository. That the Editors, in their long-continued and indefatigable labours in carrying on this publication, were actuated, not by mercenary motives, but by a laudable zeal for public and professional improvement, will appear from the fact, that none of them ever received the smallest emolument from the work. They devoted their time and talents to the good of the cause in which they engaged; and, to employ the significant language of the learned Survivor, besides some charges of a seriously expensive kind, which were unavoidably connected with their editorial character, "they "literally worked for nothing, and found them-"selves." May the present editors labour with better remuneration in time to come! and may the work long continue a monument of the zeal, the liberality, and the improvement of American physicians!

In August, 1798, the "American Mineralogical Society," of which Doctor *Miller* was an active member, endeavoured to excite the public attention to that important department of science to which their title refers. It was gratifying to see a set of gentlemen, when the dreadful pestilence of that memorable season had actually be-

gun, and when the agitation and terror which its ravages produced, were beginning to be felt, directing their attention, with so much ardour, to objects of public and national interest. The following Address to the public from a committee of that society, of which Doctor *Miller* was one, is inserted, as well because it is believed he had some concern in drafting it, as because it will afford another proof that he and his associates were animated by those sentiments of zeal for the promotion of science, and of ardent patriotism, which cannot be too highly commended.

"The Committee of the AMERICAN MINERALOGICAL SOCIETY have lately published an advertisement, the object of which was to collect into one view all the information that is scattered through the Union, relative to the means our country possesses of furnishing objects immediately requisite for national defence. They now take the liberty of offering some remarks to their fellow-citizens, upon the more general objects of their institution, and the means of improving the science it is intended to cultivate."

"If the bowels of the earth had furnished no riches but gold and silver, it were better, perhaps, that the hands of men had never penetrated them. But when we remember that iron, the parent of arts and of civilization; that mercury, so useful in

experimental philosophy, medicine and the arts ; and that sea-coal, the load-stone, and so many other objects, without which society could not exist in its present state, are the fruits of mineral labours, we shall be convinced that the world is almost as much indebted to the interior of the earth for improvements, as to its surface for subsistence. Mineral substances enter, directly or indirectly into almost every manufacture, whether of objects ornamental or useful. Glass, porcelain, gunpowder, certain of the most powerful acids, some of the most elegant and permanent of our colours and dyes, and the most powerful class of remedies known to the medical art, are chiefly of this class. How various are the forms, and how multiplied are the uses, of the instruments that art has made from the perfect and imperfect metals! Some of these by their strength and durability, are formed to apply or to resist the utmost efforts of mechanic power. Some that are equally durable yield pliably to the hand of art, and assume, with readiness, whatever forms convenience dictates. There are those that are ductile almost beyond our conception, and that receive a polish, which is proof against the ravages of time. Some yield readily to the heat of the furnace, while others defy the attacks of artificial fire. The metals, by their different degrees of strength, elasticity, durability, weight and incorruptibility, and other mineral substances, by the still greater num-

ber and importance of their qualities, are fitted for uses as various as the imaginations of men, and as important as their wants."

"A nation which is deficient either in mineral riches, or in a knowledge of them, is wanting in the most essential requisites of political and commercial independence. The United States have been little explored; but they have given indications of possessing objects to reward the researches of the mineralogist in greater abundance than most other countries. They contain vast chains of original mountains—vast tracts of country—of a secondary and of an alluvial formation—extensive plains, once the beds of lakes, and mountains broken to their centre by the convulsions of nature—it can hardly happen, in the course of things, that such a country should not be abundant in mineral resources."

"The discovery and improvement of these resources generally, is the object towards which the society wishes to direct its labours. It is hoped and believed that every description of citizens will be inclined, as occasion shall offer, to aid the undertaking. The owners of land will gladly assist in making discoveries which may enhance the value of their estates; the actual cultivator of his farm will find an interest in the discovery of marls, clays, chalk-beds, and whatever else may be use-

ful for manure ; the man of leisure, if such there be in America, will find an elegant amusement in the collection of a cabinet, and the man of science an interesting employment in the study of it."

" Encouraged by these reflections, the society beg leave to mention to their fellow-citizens some ideas relative to the means of improving the knowledge of mineralogy in this country, with little expense or labour. They suggest the following ideas, and, at the same time, are ready to consider, with due attention, any different ideas that may be suggested by others."

" 1st. Societies might be formed in different parts of the United States, and most conveniently in towns which have the means of a ready and cheap communication with the country. These societies might solicit the public in general, and the personal acquaintances of the members in particular, to furnish them with specimens of the products of all mines, ore and coal-beds, and of marbles, marls, clays, lime-stones, fossils, shells and wood, petrifactions, crystals, and, in general, of all minerals and fossils that appear worthy of attention."

" It frequently happens in this country, that farmers discover, in ploughing, and by other means, many objects well worthy of being examined and

preserved, but which are forgotten and lost for want of proper persons to examine them, and of a cabinet to place them in."

"2dly. It would greatly tend to illustrate the mineralogy of our country, and geology in general, if, with every sample received, there should be taken as exact an account as may be of the circumstances of the place where it was found, and of any facts explanatory of its natural history. A paper containing a short summary of such information might always be annexed to, and accompany the specimen."

"3dly. The societies formed might keep up a regular correspondence, and might send, each to all the others, parts of the specimens they receive, together with the written accounts of them, whenever those specimens are of a kind, and in sufficient quantity to be divided. It would also be useful to analyze parts of the specimens received, and to communicate the result. We conceive, also, that it would not be necessary to confine our cabinets too strictly to objects merely *mineral:* whatever tends to illustrate the history of the earth and of its component parts, might, perhaps, be admitted with advantage."

"A correspondence of this kind, if actively pursued a few years, would furnish our country with se-

veral valuable cabinets of mineralogy at little or no expense. These would be repositories where persons inclined to investigate such subjects, either for amusement or profit, might resort for information. They would enable the inhabitants of any one part of the Union to take a view of the mineralogy of the whole United States."

"The Chemical Society of Philadelphia have laudably set the example, by soliciting information upon the resources of our country, for furnishing an article of great national importance. We also solicit the correspondence of societies and of individuals, upon all subjects mentioned in this address, and in our former advertisement. In particular, the society requests of farmers, miners, travellers, and collectors of private cabinets, any specimens of minerals and fossils which it may be in their power to furnish, together with any intelligence respecting them; and the society will not fail, on its part, to furnish any information in its power, derived from assay, analysis, or otherwise, and to communicate it, with freedom and with pleasure, to societies and to individuals."

The malignant and fatal epidemic of 1798, is but too well recollected, by every adult inhabitant of *New-York*. Doctor *Miller* had then been residing two years in the city; and had found his medical practice considerably increased. As he

believed the Yellow Fever to be neither *imported* nor *contagious*, and as his residence was in the most healthy street in the city, he early resolved to commit himself to the care of Providence, and to remain at his post. He did so; and was mercifully preserved. The writer of this sketch also remained in the city, during that melancholy season, and spent the whole of it under the same roof with his Brother; and never shall he forget either, on the one hand, the persevering and almost incredible labours of that beloved Relative; or, on the other, the gloom and horror of the general scene. Doctor *Miller* visited all who sent for him, without discrimination or reserve. The rich, who were able to remunerate him, had chiefly left the city: his professional labours were in a great measure devoted to the poor and forsaken, from whom no recompense could be expected. Yet he attended them with unceasing assiduity; though he often exhibited such marks of fatigue, exhaustion, and mental depression on account of the scenes through which he passed, as could not have been described, or easily conceived, without personally witnessing them. It pleased God to carry him through the season in safety; and it proved of essential service to him, not only in contributing to the rapid and great extension of his medical practice; but also in enlarging the sphere of his experience, and in enabling him afterwards to write with more intelli-

gence, discrimination, and confidence on the subject of that awful epidemic.

Among the victims of this wasting disease, in the season of which we are speaking, Doctor *Miller* was called to lament the loss of his affectionate friend, and able colleague, Doctor *Elihu H. Smith*, who, in the morning of life and usefulness, and in the midst of professional exertions, as honourable to himself, as they were beneficial to others, was sent to a premature grave. This was, on a variety of accounts, a very distressing bereavement to the surviving editors of the Medical Repository; but the circumstances under which it occurred, rendered it doubly gloomy and depressing. Never can the writer of these lines forget the funeral of Doctor *Smith*. It was when the ravages of pestilence had become so tremendous as to drive almost every individual from the city who was able to fly; when scarcely any passengers were to be seen in the streets, but the bearers of the dead to the tomb; and when it appeared as if the reign of death must become universal;—it was in circumstances such as these, that Doctors *Mitchill and Miller*, accompanied with two or three other friends, bedewed with their tears, and followed to the grave, the remains of a Young Man, in some respects one of the most enlightened and promising that ever adorned the annals of American science.

In the year 1801, the writer of these memoirs undertook a work, which was published soon afterwards, under the title of *A Brief Retrospect of the Eighteenth Century ; Part First, containing a Sketch of the Revolutions and Improvements in Science, Arts, and Literature, during that period.* The tolerable completion of his plan obliged him to attempt an exhibition of the principal discoveries and improvements in *Medicine*, during the period which was to be delineated. When he came to that part of his work, his Brother, with that affection for which he was always distinguished, offered to furnish the requisite materials, and to give any other assistance in his power. This offer was accepted, and was more than realized. The readers of the "Retrospect" have, doubtless, observed, that the chapter on "Medicine" is by far the best part of the work. Its matter, its arrangement and its style, are all superiour to those of any other in the volumes. The truth is, that three-fourths of that chapter were written by Doctor *Edward Miller ;* a few pages only of the latter (and certainly the inferiour) part being written by the author of the main body of that publication. Permission was earnestly and repeatedly requested from him to state this to the public in a note, at the commencement of the chapter in question ; but he pointedly and perseveringly refused. His

native modesty shrunk from such an obtrusion of his name on the public notice. He had written in haste, and considered the sketch which he had furnished, though adapted to the place which it was intended to occupy, as by no means sufficiently digested to be sent abroad under the name of a physician. And, what probably operated with no less force, such was his uniform and tender affection for his Brother, that he was willing to transfer to him, whatever credit in public estimation might be attached to that part of the work. That brother, however, who feels a confidence founded on the opinion of much better judges than himself, that the chapter in question, the more it is examined, will be found more distinctly to bear the marks of the vigorous, comprehensive, well-stored, and polished mind, by which the greater part of it was produced, considers himself as now at liberty to give the history of its composition. He takes more pleasure than he can well express in perusing that chapter as a memorial of his relation to one to whom he feels next to his Parents, more indebted than to any other mortal; and whose numberless monuments of fraternal affection, he cannot contemplate without the tenderest emotions.

Doctor *Miller* had not been many years established in the practice of his profession in *New-*

York, before he received testimonies of public confidence of the most decisive and honourable kind. Soon after the commencement of that distressing period, in which the principal cities of the United States, were almost annually visited with malignant fever, the Legislature of the State passed an Act for preventing the introduction of pestilential diseases. By that act, the execution of its provisions was entrusted to three principal officers. One of these was called the Resident Physician, because it was his duty to reside in the city of *New-York*; to watch and give notice of the progress of malignant epidemics; and promptly to adopt such measures as exigencies may require. To this office, at all times full of hazard and responsibility, and at that time peculiarly so, Doctor *Miller* was appointed, by the Governour and Council, at *Albany*, in 1803, as the successor of Doctor *Tillary*. In the several pestilential seasons which succeeded this appointment, he fulfilled the duties of his office with skill, intrepidity, and universal acceptance. His diligence, his firmness, his discernment, his prudence, his mildness and urbanity of address, and his unwearied perseverance, were all qualifications which fitted him pre-eminently for a place, in which public safety, as well as public feelings and prejudices, were to be so constantly consulted and managed. He continued to hold this important station until the winter of the year 1810, when

the political sentiments of the Council undergoing a change, he was superseded, solely and avowedly on political grounds. In the course of the year following, when the Council reverted to their former sentiments, he was restored to the office, and continued to hold it until his death. He was succeeded by Doctor *M'Neven.*

The summer and autumn of 1805 was the last season in which Doctor *Miller* was called to witness the distressing and fatal ravages of yellow fever. At the close of the season, in his official character as Resident Physician, he addressed to his excellency governour *Lewis*, a Report of the rise, progress, and termination of that disease. To this detail, he added an exhibition and defence of the doctrine concerning the *origin* of yellow fever, which, after much inquiry, and long experience, he had adopted. This Report was, shortly afterwards, laid before the public; and has been pronounced, by good judges, to be one of the most luminous, forcible, comprehensive, and satisfactory defences of the doctrine which it supports, that ever appeared, within the same compass, in any language. The substance of this Report, with additions, was afterwards subjoined, by the author, as an appendix to the American edition of Dr. *Thomas's* "Modern Practice of Physic."

But in 1807, a new and still more interesting field of employment was opened to him. As long ago as the year 1791, it had appeared to many members of the medical profession, that they might derive important advantages from being incorporated as a College of Physicians. By one of the early laws of the State of *New-York*, the power of incorporating colleges as well as academies, had been granted to the "Regents of the University of *New-York*." Doubts, however, having been entertained whether the authority so vested, extended to the creation of a Medical Institution, the Legislature enacted an express statute, empowering the Regents to incorporate a "College of Physicians and Surgeons." But difficulties of various kinds arose, and the plan was never carried into execution until the month of March, 1807. Then, at the warm and pressing instance of Doctor *Nicholas Romayne*, seconded by other friends of the Institution, and during the administration of Governour *Lewis*, a Charter was obtained for associating the physicians into a College. One great object in constituting this incorporation was the promotion of professional education upon a regular and enlarged plan. Such a plan was immediately carried into effect. In a few weeks after the charter was granted, professorships were formed, and professors elected. The chair of the Practice of Physic was given to

Doctor *Miller ;* and he entered on the duties of his office in the month of November following.

He by no means regarded this professorship as a mere title of honour. Strict fidelity to every trust reposed in him was one of the first articles in his moral and professional creed. He therefore began immediately to prepare himself for that course of public instruction which his office demanded ; and it proved such as his talents, his learning, and his zeal had taught his friends to expect. " His Lectures," says one, who is a competent judge, " were highly commended by " his hearers, as combining much instructive " matter, with an unusually agreeable manner." And another, no less competent, pronounced them to have been " probably among the best specimens " of public medical instruction ever exhibited in " our country."

Doctor *Miller* generally, and more especially on some occasions, appeared so advantageously in the Professor's chair, that many of his hearers took for granted that the most of his Lectures were completely and carefully written. And, accordingly, the writer of these memoirs, from representations of this kind having been so frequently made to him, confidently expected to find among his Brother's papers a number of manuscript Lectures of this description. In this ex-

pectation, however, he was disappointed. He found only three, in any thing like a state of completeness, and these were all *Introductory* Lectures.* Of the rest, he discovered only short (and sometimes very short) notes, or hints, which had been extemporaneously amplified into those connected, luminous, and instructive discourses, which gave so much satisfaction, and which his hearers generally believed to have been laboriously prepared.

In the year 1809, Doctor *Miller* was appointed one of the physicians of the *New-York* Hospital; and, soon afterwards, received the appointment of Clinical Lecturer in that Institution. To the various duties of these new stations, he addressed himself with all that diligence and assiduity, which his zeal for the promotion of medical knowledge, and his desire to serve the interests of humanity, could dictate. The second of the Introductory Lectures which make a part of this volume, was delivered at the commencement of one of his courses of Clinical Lectures in the Hospital; and it may be said of the whole, that they were not less instructive and useful, than those which he delivered as Professor. "His junior contempo-
"raries," said one of his learned medical Friends, "will long remember the sympathy for the sick, "and the regard for the well, which characterized

*These are all published at the close of the present volume.

" his bed-side instructions. They will never for-
" get the sound judgment which guided his prac-
" tice, nor the winning urbanity which distinguish-
" ed his discourses."

While Doctor *Miller* was assiduously and ably fulfilling the duties of the various public stations which have been mentioned, and attending to the multiplied calls of a large practice, he was engaged in an extensive correspondence with eminent physicians and others, in almost every part of *Europe* and *America*.* Though in literature and science, as well as in politics, he was a thoroughgoing *American;* and was very far from joining with those who either deny the capacity, or despise the attainments, of American genius. Nay, though he thought that his own country, for her inquiries and improvements, was entitled to a full share of credit from the medical world; yet he had a liberality and magnanimity of spirit, which prompted him to look with eagerness to every part of the globe from which new light might be expected, and to hail its appearance whencesoever

* Among his numerous foreign correspondents at different periods, the following are recollected by the editor. Doctor *Duncan*, of *Edinburgh;* Doctor *Beddoes* of *Bristol;* Doctor *Currie*, of *Liverpool;* Doctors *Mosely*, *Heberden*, *Pearson*, and *Lettsom*, of *London;* Doctor *Patterson*, of *Londonderry;* *Corvisart*, of *Paris;* Doctor *Valentin*, of *Montpellier;* Doctor *Olbers*, of *Bremen;* Professor *Ebeling*, of *Hamburgh;* and Doctor *Bancroft* of *Jamaica*.

it might come. He contemplated with profound respect the venerable institutions of *Europe;* and took peculiar pleasure in maintaining such a foreign as well as domestic correspondence, as made him early acquainted with all important discoveries and improvements in every part of the scientific world.

The testimonies of respect which Doctor *Miller* received from various parts of his own country, were numerous and flattering. In the year 1805, he was elected a member of the "Philosophical Society, held at *Philadelphia*, for promoting Useful Knowledge." The principal medical societies, in almost all the States in the Union, did him the honour to enrol his name among their Corresponding or Honorary members. And the letters, which, every week, flowed in upon him, from all quarters, communicating medical intelligence, or soliciting professional advice, furnished the most decisive evidence of the large share of public confidence which he enjoyed, and of his growing reputation.

Thus occupied in public and private business, accumulated to such an amount as scarcely to leave him an hour of repose, either by day or by night, he was arrested by that iron grasp of Disease, from which he had so often been the means of disengaging others, and, to the grief of all who

knew him, sunk under its power. So full an account of the progress and termination of this disease, will be given presently, in the language of one of his medical Friends, that it is unnecessary to dwell on the subject here. Suffice it to say, that after the most flattering hopes of recovery had been for some days cherished by all around him, and when, indeed, every idea of danger had been dismissed, he suddenly relapsed, on the 14th, and died on the 17th of March, 1812, in the fifty-second year of his age.

The writer of this tribute of fraternal affection, instead of attempting, if it were possible, to obtrude on public view the emotions which filled his own bosom, when an *only* Brother, and *such* a Brother, was so unexpectedly torn from life and usefulness, will take the liberty of introducing the language, and exhibiting the feelings of more impartial judges. Out of many letters of condolence, or testimonies of respect which came to his hands, a few only can be selected.

On the third day after the death of Doctor *Miller*, the following Letter was received from that venerable Man, and first of American Physicians, who had been the paternal Friend of his youth, and had followed him, with the tenderest affection, to the end of life; and who, alas! to the regret of every friend of humanity, science and genius, was

destined to survive him but little more than a year.

"*Philadelphia*, March 19th, 1812."

"My dear Friend,"

"Col. *M'Lane* communicated to me in a short note, yesterday morning, the distressing intelligence of the death of my much-loved and invaluable Friend. It afflicted me in the most sensible manner. He was very dear to me, not only from his uncommon worth; but also because he was my early and uniform friend. In an intercourse of thirty years, I never saw any thing in him that was not calculated to excite affection, esteem, and admiration. During the confederacy of my brethren against me, in the memorable years in which the Yellow Fever prevailed in our city, he openly advocated my principles and practice; and by the weight of his name, and the learning and ingenuity of his publications, contributed very much to their establishment in our country. Judge of my affection for him, and the value I placed upon his integrity and friendship, when I add, that, four or five years ago, in a private interview, in my own house, I committed my lectures and manuscripts to him, to be revised by him, and published or destroyed as he saw proper, after my death. He received this communication with a good deal of

emotion, and promised to fulfil my wishes, in case he should survive me.——But why do I complain of the loss I have sustained by his death? Science, Literature, Humanity, the United States, have all been deprived of one of their strongest pillars, and most beautiful ornaments. They will long, very long deplore his early and premature removal from the high and useful station he filled in life. They now mingle their tears with yours and mine. When the late Reverend *William Tennent*, of *Freehold*, heard of the death of his friend, Doctor *Finley*,* he cried out, "I feel as if I had lost my "broad-side. He was my brother. I could have "gone to prison and to death with him!" I imagine we both feel disposed to adopt the same affectionate and passionate expressions in revolving in our minds the uncommon virtues and attainments of our departed Friend and Brother. His death has rendered the republic of medicine a solitude to me; for he filled a place in my bosom which no physician in our country is able, or, if able, not willing to occupy."

"But in thus venting our sorrows to each other, let us not forget the dictates of the holy religion we profess. God never created any creature comfort, not even the innocent delights of friendship and fraternal affection, to rise in rebellion against

* The Reverend Doctor *Finley*, President of the College of *New-Jersey*. Edit.

himself; and however severely we may feel the loss of them, it is probably intended to teach us that they are not indispensably necessary to our substantial and permanent happiness; and that there is indeed "a Friend that sticketh closer than a brother."

"I will endeavour to write something for the public eye on this distressing occasion. But ah! my friend,

"Grief unaffected suits but ill with art,
"And flowing periods with a bleeding heart."

"Since the death of my illustrious fellow-labourer in the science of Medicine, and the awful summons it has conveyed to me from the grave, I feel my ardour in my professional pursuits suddenly suspended, and am ready to say to the sources of all my knowledge and pleasures, in the language of the Scotch poet, a little varied."

"Books, wander where ye like, I dun no care,
"I'll break my pen, and never study mare."

"Accept of my tenderest sympathy for the death of your darling little boy.* Ah! Dr.

* This paragraph refers to another bereavement which the writer of the present sketch was called to sustain, a little more

Miller, Dr. *Miller!* my son, my friend, my brother!"

"BENJAMIN RUSH."

"Reverend Doctor *Miller*."

In a day or two after the date of the preceding letter, a "tribute of respect" from the same pen, appeared in one of the gazettes of *Philadelphia*, of which the following is an extract.

———"But Dr. *Miller* was not a citizen of *New-York* only. He lived throughout the whole republic of medicine in every part of the world by means of an extensive correspondence, for which he was admirably fitted, not only by his uncommon fund of knowledge, but by a facility and elegance in letter-writing which have rarely been equalled, and perhaps never surpassed. In this way he became a channel through which every thing new in medicine in foreign countries was immediately communicated to his own."

"His fellow-citizens in *New-York* were not insensible of his worth. In the year 1805, he was appointed Resident Physician of the port of *New-York*, and in the year 1809, Professor of the Prac-

than a month before the death of his Brother; on which occasion the sympathy and tenderness of that Brother, as they cannot be described, so they will never be forgotten.

tice of Medicine, in the New College of Physicians. From the elevated station in which his talents and virtues had thus placed him, and in the meridian of his usefulness, with every enjoyment that affluent business, a well-earned reputation, numerous friends, and an affectionate brother and sister could confer, it pleased God to remove him from our world."

"It is to commend him partially to say, he was a learned and skilful physician, and a man of general science. He was at the same time a radical and accurate English, French and Latin Scholar, and his mind was stored with the beauties of the most celebrated poets and historians of Britain, France and Rome. But his principal merit was of a moral nature.—The charm that was constantly diffused over his countenance and manners, was the effect of the habitual benevolence of his temper. The silence of pain and the eye of hope, which took place in his patients the moment he sat down by their bed-sides, were produced, not more by their conviction of his skill, than by their unlimited confidence in his sympathy and integrity; and the affectionate attachment and esteem of his friends was founded in a belief that his deeds of kindness to them, were not simply the effects of spontaneous feeling, but the result of a heartfelt sense of moral obligation."

" Let the Professors and Students of the healing art, and the lovers of Science, every where deplore the death of this eminent physician, and excellent man. Let the friends of humanity drop a tear over his untimely grave. In the records of illustrious men who have promoted and adorned the science of our country, Dr. MILLER will always maintain a distinguished rank. Alas! this ornament of both, is now no more !"

Doctor *Valentine Seaman*, of *New-York*, between whom and Doctor *Miller*, there had existed, for a number of years, a personal friendship and a professional intercourse of the most intimate and confidential kind, was one of the most sincere mourners at his death. At the commencement of his next course of Clinical Lectures in the *New-York* Hospital, this highly respectable Physician and medical Instructor, thought proper to pay a tribute of respect to the memory of his Friend, which the editor was persuaded he should gratify his readers by soliciting for insertion in this place.* Doctor *Seaman* thus addressed his pupils.

* In this extract from Doctor *Seaman's* Lecture the reader will perceive several sentences which contain a repetition, in a degree, of some facts before stated. As it was not easy, however, to detach these sentences from the parts with which they are connected, without injury to the whole, it was judged expedient to retain them.

——" The painful task still remains. It remains for me to announce to you the death of our much esteemed, and ever to be lamented friend and colleague, the late Dr. *Edward Miller.* Those among you who have ever experienced the loss of a near and dear friend; who have felt the tender emotions which make the mind delight to dwell upon the recollections of their virtues, and to recount their amiable qualities, I am sure will excuse me in detaining you a few minutes, while I attempt a short account of the character, and of the death of this most excellent man."

" Upwards of twelve years of uninterrupted friendship, of close and continued professional intercourse, of repeated reciprocations of professional favours, and of unbroken confidence, have caused his death to inflict a wound in my feelings, which time itself will never heal; to produce a chasm in the mind which never will be filled up. 'Tis not, however, from these mere personal considerations, that I should presume upon your patience; but there was something so exemplary in the life of Dr. *Miller;* something so richly rewarded too, by the esteem and affection of an extensive acquaintance, and by the general respect of the medical profession, and of the community at large, that humanity itself would seem to forbid our not holding it up to the admiration of his survivors as an incentive to a generous emulation."

" Dr. *Miller* had been complaining of some pain in his chest and feverishness, for several days previous to his being confined to the house. At a sickly season, with a number of patients under his care, from whom he hardly knew how to withhold his services, he continued to visit them much longer than an attention to his own welfare would justify. On the 22d of February, not being any longer able to go out, he reluctantly consented to keep house; and for the greater part of the time kept his bed; still, however, admitting messages from his patients, and wearying himself in giving advice. These services, also, after a few days, he was obliged to relinquish."

" After more than two weeks of distressing and severe illness, with almost unceasing watchfulness, his complaints gradually abated; his sleep returned; the pain in his chest subsided; his cough had become trifling; and his fever nearly, if not quite, gone. He was still, however, very weak; yet not so much so but that he could sit up for several hours together.—Just at this time, giving way to the strong bent of his mind, he indulged himself in the perusal of letters and pamphlets which had been accumulating upon his table during the more severe state of his disease. He passed nearly five hours in looking them over. This indulgence, alas! was a fatal one! The mind over-stretched, and the debilitated body overpowered, by the too

great exertion, a restless night succeeded, with a return of fever and some slight marks of delirium; all of which rapidly increasing, in fifty-six hours terminated his life. At 8 o'clock in the morning, on the 17th day of March, amidst the lamentations of his friends, he breathed his last."

"This mournful event was no sooner known to the anxious crowd surrounding his door, than it was spread in every direction. In a very little time it was known throughout the city; and many of its most worthy and respectable inhabitants felt the shock as from the loss of one of their own family; for such was the affectionate deportment of Dr. *Miller* towards those under his care, that many seemed to claim him as one of their own household. Yet even these were not aware of the degree of their attachment to him, till his death awakened them to a more full sense of their loss. They mourned; but they mourned not without cause. In Dr. *Miller* they had lost much. They had lost an interesting friend, an ever-ready adviser, their body-guard in health; their champion, their hope and confidence in disease. His medical friends had still more cause for regret. His rare talents, his well-stored mind, (always keeping pace with improvement in medical science) his accessibility, his freedom in communicating every useful intelligence, all conspired to make his loss be severely felt by them, and es-

pecially by his more immediate associates and colleagues."

"The general estimation in which he was held was particularly evinced at his funeral. In no instance do we recollect to have witnessed so great a procession following the remains of a private individual to the grave. Nor was this the effect of extensive family connections; a single relative only, helped to lengthen out the solemn train. It was the effect of the regard that his own personal merits had commanded. He stood high in the estimation of the public, in the consideration of his acquaintance, and in the hearts of his friends. All seemed desirous of shewing this last mark of respect to his remains. The Corporation of the city, in a body, with their officers; the Governours of the *New-York* Hospital, with those attached to the establishment; the members of the Medical Society, and the classes of the Students of Medicine, by previous resolutions, all attended; which, together with a large concourse of other citizens, formed as numerous an assemblage of *real* mourners, as perhaps ever collected upon a like occasion."

"While pulpits and the forum resound in eulogizing the memory of the valiant and the brave; in celebrating the achievements and the slaughterings of the war-worn veteran, covered with the blood of his fellow men; it hardly could be sup-

posed that the votaries of science would permit one of her most favourite sons to sink in silence to the tomb. No! one whose time was daily occupied from early dawn, till past the midnight hour, not in contriving the destruction, but, in working the preservation of mens' lives, was not to be suffered to pass thus lightly away. Scientific considerations, personal feelings, and the general good, all demanded some public expression of respect; some account of the life and of the works of so distinguished a character. Hence, at the earliest period after his death, before his remains had yet pressed upon their bier, the members of the Medical Institution resolved to commemorate the virtues, and to express their sense of the loss, of their worthy Associate, by a public Discourse upon the mournful occasion. And Dr. *Watts* soon after delivered, to a large and mixed audience, an appropriate oration in honour of his memory."

"Soon after his death, a *Tribute to his memory*, from the inimitable pen of his early and intimate friend Dr. *Rush*, appeared in the public prints. This publication, although without a signature, yet from its style, its lively expression of sympathetic affection and regard, at once betrayed the source from whence it was derived. No man knew Dr. *Miller* better than Dr. *Rush*. No one was more capable of appreciating his merits. Few loved him more, or more regretted his loss."

" But we rest not Dr. *Miller's* claims to respect upon the grounds of funereal honours. We must look at him through his works. We pass over the little anecdotes of his early years; nor, indeed, do we know that they ever evinced any decisive marks of extraordinary genius. We have, however, the fullest evidence of his possessing by nature, a sound and a capacious mind, which by the superintending care of a faithful Parent, well qualified for the purpose, was early inured to assiduous and persevering application; whence he was enabled readily to overcome all the difficulties of completing a knowledge of the dead languages. He was master of the Latin and Greek, and he was no stranger to the different dialects of modern Europe."

" After completing his academic studies, in which he had gained no small share of reputation for his accuracy in classical learning, he directed his attention to the study of the healing art. How fortunate for medicine to have a mind thus stored, a mind in which habit had made close application a seeming constituent part of its own nature; a mind accustomed to meet obstructions without dismay, and to overcome them without difficulty, enlisted among its votaries! Dr. *Miller's* industrious habits did not forsake him in his new pursuit. He followed up his studies with an ardour becoming their great object, and succeeded in a

manner becoming the high character he afterwards sustained in its practice."

" So convinced was he of the necessity of familiarizing himself with the appearances of diseases as they present themselves in practice, that, after the completion of his pupilage, with practical advantages equal to other students, he, in 1781, entered as surgeon's mate in the military Hospitals of the United States, thus more completely to prepare himself for the important duties of his profession. Although then but a mere youth, his profound medical erudition, as we are lately told by one of the surgeons, immediately attracted the attention and admiration of the medical gentlemen attached to that department. The early impression thus received, in favour of Hospital instruction, in qualifying for the practice of medicine, continued with him, and increased with his increasing years and experience. Hence, in a late communication to the governours of this House upon that subject, he remarked, that " It was " scarcely necessary to observe that a *practical* " acquaintance with medicine and surgery, forms " the most important part of the qualifications of a " physician and surgeon: and that this can be " best acquired by attending to the appearances " and treatment of diseases as exhibited in the " practice of a large hospital." But Dr. *Miller* was not to be satisfied with merely recommending

measures. He himself entered the field; he took hold of the plough and looked not back. From the earliest period of his accepting the charge of a public teacher, his attention was particularly directed to clinical instruction, and latterly he declined every other concern in that way, that he might devote his time more especially to this object: for this he gave up the advantages that might be more easily obtained in the professional chair of the Practice of Physic. His views, it would hence appear, were not directed toward the attainment of medical celebrity. Of that he had full share; but had he not, he certainly never would have thought of looking for it from the exposed place of a clinical teacher. He well knew that while other professors might sit in their chairs and paint out diseases, mark their diagnosis, prognosticate their event, and prescribe for their cure with the greatest ease, and in the correctest manner, the clinical teacher in an Hospital must meet diseases as they come, complicated in endless variety: in constitutions whose habits he is altogether unacquainted with; in systems broken down and deranged in various and unknown ways; with symptoms, sometimes in description greatly exaggerated, at others carelessly described, and some again altogether unmentioned by the patient. No near friend or intelligent acquaintance to help out the lame relation of the disordered sufferer; no one to say how he was seized; how his

disease progressed; or what had been attempted for its relief. Under all these perplexities he has to identify the malady, to prescribe for its cure, and to foretel its event. Is it possible, thus circumstanced, but that he will sometimes err in his calculations, be deceived in his prognosis, or disappointed in his remedies? either of which will more or less affect his reputation. No one, therefore, aiming at eminence, would ever expose himself in this department of medicine. But Dr. *Miller's* views were directed to the advancement of his profession, not of his own fame. The good works in which he delighted I trust now meet their reward! His last days were occupied in attending the sick, and expounding the nature of their diseases, and the grounds of his practice to the students of this hospital. Many now present can witness his disinterested zeal and solicitude for their improvement, and his continued and successful exertions here for the promotion of the medical art. While the lovers of science bemoan his untimely death, thus cut off in the meridian of his usefulness; while they drop the tributary tear to departed worth, let his surviving colleagues, by a redoubled diligence, endeavour to lessen the effects of your loss."

"The literary character of Dr. *Miller* is well exhibited in his writings, contained principally in the pages of the Medical Repository, in the con-

ducting of which, from its first establishment to nearly the completion of the last volume, he performed the part of an active editor. It is to his attentive observations and accurate investigations detailed in that work, together with some distinct papers upon the subject, particularly his Report to governour *Lewis*, that we are much indebted for the opinions now more generally entertained in regard to the nature of the yellow fever; a mistaken notion relative to which, more than its malignancy, spread such terror and consternation throughout our country."

"The superiour talents of the conductors of the Medical Repository are strikingly exhibited to the most superficial observer, by comparing the ordinary editorial remarks and prefatory observations of each volume, with those connected with other works of the kind. They shew something very different from what we generally meet with in such publications."

"Their Reviews also shew unusual liberality and candour; a masterly comprehension of the subjects, which needed not that little hard strained satire, sarcasm and misrepresentation, which too many of those, who thus assume the province of directing the public mind, think essential to their success —The Reviewers of the Repository possessed not that disposition which could not abide

the better part; that malignant eye, which could not bear the beauty of what came under its inspection. They were not seekers of evil rather than of good; they had no malevolence to satisfy. No; they appeared to delight in discovering and giving publicity to the valuable works of others: they feared not to give praise where praise was due. If their liberal conduct upon these occasions, ever gave any grounds for the charge of their passing more lightly over the errors and imperfections of authors, than strict justice to the public would warrant, it shews at least, that "E'en their failings lean'd to virtue's side." If in an instance or two, in the earlier periods of the reviews, Dr. *Miller* indulged rather freely, in a vein of satire and severity of remark, he heartily condemned it afterwards. I have heard him express regret at the circumstance, as being no way calculated to promote the views of science or the discovery of useful truths. His subsequent restraint upon the talents which he so eminently possessed in that way, sufficiently evince the sincerity of his professions."

"The general spirit of the reviews in the Repository were highly emblematical of the disposition of Dr. *Miller*. Of an enlarged and liberal mind, he never allowed little sectarian or partial prejudices to interfere with his views of the general good. He never attempted to kindle animosi-

ties, nor to interrupt the promotion of others, because they were not among those of his more intimate associates, or from a fear that it might diminish his own consequence. Far! far different were his ideas of excellence. Was he desirous of distinction? it was to be obtained by a high and honourable spirit of emulation only. He knew not how to practise a double part: he would have shuddered at the thought of attempting by treacherous proffers of friendship, to wound the sensibility of unsuspecting credulity. But why dwell upon these mere negative virtues? Dr. *Miller's* character rests not upon the mere merits of not doing harm. It is founded upon a life spent in the employment of the most active virtues. The whole scope of his literary exertions seems to have been directed to alleviating the sufferings and relieving the diseases of his fellow-creatures. His daily labour was in dispensing good; nor will any one suspect him of being governed therein by interested motives. His inattention to his pecuniary concerns, is too full evidence to the contrary. He seemed never to think of money, only as his immediate necessities required. His Encomiastic noticer (in the Medical Repository) justly observes of him, that "although he had time "enough to attend to every thing else, he had no "time to make a fortune." He rather offended his friends by neglecting to send in their accounts, than in urging remuneration for his services."

" Dr. *Miller* never dealt in slander; he never whispered innuendoes. In all our intercourse we never knew him to shrug his shoulders; never heard him say, *entre nous*, or, let this go no further. It was a standing rule with him to speak ill of no man, especially of those of the profession, unless the common good demanded it of him. Hence he conciliated the general good will of his brethren. The honest enquirer, whose opportunities had not furnished equal means of information with himself, was always sure, however ignorant, to meet a friend in Dr. *Miller;* always sure of gaining every advice and instruction that his extensive intelligence could afford: yet the bold presuming empiric, and the ignorant impostor, however high they might stand in *aniles fabulæ*, however esteemed and favoured by the credulous multitude, were ever sure to meet his severe censure and unqualified reprehension."

" In acts of charity, Dr. *Miller* was constantly engaged; nor was it his personal services and gratuitously dispensing of medicines that limited their extent. No one will charge him with sending away pleading poverty unassisted; and yet he never spoke of his alms-doings. He was among those, whose disposition it is " to do good by stealth and blush to find it fame." Yet notwithstanding his great care to keep his charitable acts from the public eye, instances are not wanting,

where meeting with poverty and disease, he turned not his back, nor like the empty professors of old, passed by on the other side, but stopped and administered relief, both by pouring in the oil and the wine of his professional skill, and by having them otherwise cared for, having them nursed and boarded at his own expense. What shall we say of this modern Samaritan! I will not say "we ne'er shall see his like again." I suspect however, we seldom meet a more real neighbour, one of more disinterested benevolence, of more christian love."

"In a moral point of view, the character of Dr. *Miller* was irreproachable. His general urbanity attracted the respect and attention of all who knew him. Although possessed of superiour talents, he was modest in his deportment. Although from his distinguished reputation as a physician, he might have accumulated wealth, yet was he moderate in his desires: possessing an ample income, yet betrayed he no weakness in the vanity of equipage: ever neat in his person, he never gave way to gaudy pageantry in dress."

"In what related to his own particular concerns, Dr. *Miller* was habitually reserved; hence his views and sentiments upon the subject of Religion he kept very much to himself. I am authorized, however, to say, that "he always decla-

red himself a firm believer in the divine origin of Christianity, and reverenced the scriptures as a revelation from God. This was particularly manifested during the two or three last months of his life, and more especially in the course of his last illness. On a variety of occasions he discovered much tenderness and seriousness of spirit when speaking on the subject of religion. There was scarcely any thing which he more disapproved, or which was more apt to excite his indignation, than sneers or scoffing, when directed against religion, or its professors."

" I am assured by one who enjoyed more of his conversation, than any one else, that " he never heard a profane or indecent expression from his lips. Probably, said he, there hardly ever lived a man whose conversation was more correct, chaste and guarded."

" I know not that I ever saw a person, more temperate than he was. He seldom drank any thing stronger than water; and he discouraged the use of ardent spirits both by precept and example, as far as possible."

" The delicate and affectionate manner in which he discharged the duties which he owed to the more immediate circle of his relatives and particular friends, is above all praise. He was in the

habit of annually paying a visit of 8 or 10 days to his sister and friends in Philadelphia. His nearest relative in this city, to whom he had rendered himself dear beyond measure, never hears his name mentioned without evidencing the most affecting distress."

"Dr. *Miller* was decided in his political principles. Hence in those public vehicles of slander, the party papers of the day, where not to be noticed, would argue either want of consequence, or a suspicion of sincerity, he was occasionally assailed; but never with violence. Their reptile managers, cunning as serpents, merely spit and hissed at a distance: they never dared to stick their frangible fangs against that coat of mail, which virtue and an honest integrity had wrought around his unblemished reputation."

"Now if, with Tully, we consider real glory to consist in having the confidence of the people, in being beloved by them, and in their considering us worthy of honour, then indeed must the life of Dr. *Miller* have been truly glorious; for by them who knew him, and his acquaintances were not a few, none shared more confidence, none was more beloved, none thought more deserving of honour."

"Should my friendship be suspected of having

estimated him too highly, it cannot but be acknowledged that the advantage derived from a long and confidential intercourse, may enable me, more than many others, duly to appreciate his worth; for although Dr. *Miller* was affable and communicative where occasion required, still upon the whole he might be considered as rather retired than obtrusive in his manner; and, as before mentioned, in whatever related to himself or of his opinions, he was rather reserved than ostentatious. The nearer he was approached, the better he appeared."

"With a sound understanding, well stored with knowledge, mellowed by reflection and experience: and with a disposition so well directed to employ that knowledge to the best of purposes: enjoying the confidence of the people equal to the extent of his exertions, was he, while engaged in an extensive and varied usefulness, thus suddenly snatched from his patients, his friends, and his profession. We perhaps never could have it more fully exemplified, that "The paths of glory lead but to the grave," than in the death of Dr. *Miller*. Had he, during the incipient stage of his disease, been more attentive to his own health, and less solicitous for the health of others; had he consented to leave his patients before his exhausted muscles had refused to transport his frame from house to house, *we* might perhaps not now have to bemoan the loss of one of *our* best friends;

his patients one of the best physicians; the medical profession one of its greatest ornaments. But alas! my friends, this friend of ours, this favoured friend of science, this friend to man, is no more. My friend, my colleague, alas! is fled forever."

" He who each virtue fir'd, each grace refin'd,
" Friend, teacher, pattern, darling of mankind,
" Now sleeps in dust."

" May his survivors, the companions of his life inherit *a double portion of his spirit!* May the good name that he has left—the mantle that he dropped at his departure, enable them successfully to emulate his virtues!"

In the eulogy pronounced in the City-Hall, at *New-York*, by Doctor *Mitchill*, in honour of Doctor *Benjamin Rush*, on the 8th day of May, 1813, the learned orator, after having mentioned his late colleagues, Drs. *Smith* and *Miller*, as gentlemen with whom the deceased professor corresponded, and in whom he had great confidence, thus proceeded.—

" Of these two gentlemen, thus brought to my recollection, permit me to make the mention that friendship inspires. With them both, I enjoyed that virtuous intercourse which renders acquaintance delightful."

"The former (Dr. *E. H. Smith*) possessed a mind of such rare and exquisite finish; a temper so adapted to the social condition; and a manner so delicate and refined, that few of his contemporaries could rival him. With a diligence which left him few lost moments to regret; a method that placed every thing he knew just where it ought to be; and an application of his talents to do all the good in his power, he was an ornament to the time in which he lived. Difficult, indeed, would it be to find such another!"

"The latter (Dr. *Miller*,) also, my companion and fellow labourer, in undertakings which, to ourselves at least, seemed useful and advantageous, was endowed with uncommon qualities. His head was a treasury of information; his heart was a mine of beneficence. With a rich fund of learning, and a capacity to turn that acquirement to the best account, he shewed to great advantage in the most respectable circles. His professional career, both in his public capacity, and his private walks, was the subject of such commendation, that the calls to service were almost incessant. When such excellence, with all the mildness and benignity which adorned it, was summoned away, it is no wonder that the city felt a disposition to mourn."

The following reference to the funeral of the

deceased, from an unknown hand, appeared in one of the morning papers of *New-York*, the day after that event.

" Yesterday afternoon, was interred in one of the vaults of the new Presbyterian Church in this city, the mortal part of Dr. *Edward Miller*. The funeral, for the number, and respectability of its attendants, has not, we believe, been equalled, since the interment of Gen. *Hamilton*. After the procession had entered the Church, the body was deposited at the foot of the pulpit, and remained there, while a most eloquent and pathetic address was delivered by the Rev. Dr. ROMEYN. Every part of the Church was crowded, and every eye was moistened, by sympathetic feelings, for the irreparable loss sustained, by the relatives of the deceased ; yet the *extent* of that loss, can be properly appreciated, only by those, whose intimate knowledge of him has afforded them an opportunity of witnessing his conduct, as a friend, and a brother. We have said that sympathy clouded the brow of every spectator ; but a more selfish feeling quickly came to share the tear it excited. Every one mourned the loss of uncommon talents, and medical eminence, to society at large. Every one regretted that the light which had guided the junior professors of the healing art, was so soon extinguished."

The following paragraphs are from the pen of professor *Hosack*, and make a part of a biographical sketch contained in the *Medical and Philosophical Register*, a valuable periodical work, of which that gentleman is the principal editor.* This honourable testimony to the character of Doctor *Miller* will be the more highly appreciated, when it is recollected, that it comes from one who essentially differed from him in opinion on a great medical question, and who has more than once appeared before the public as a professional antagonist. This circumstance also, while it gives additional weight to the testimony in question, exhibits in a light which will not be overlooked, the magnanimity by which it was dictated.

"From the review of the life and literary labours of Dr. *Miller*, let us now turn to a consideration of his character. Whether we consider Dr. *Miller* as a physician or as a man; whether in the walks of public or in private life, he has equal claims to our respect and admiration. Endowed by nature with a mind at once quick in its perceptions and comprehensive in its views, and with a memory extremely retentive and accurate, he acquired, from his great thirst for knowledge and devotedness to study, an intimate acquaintance with the science of medicine. From his profi-

* Vol. III, p. 6.

ciency in the Greek and Latin languages, and in those of modern Europe, he was enabled to obtain ready access to the treasures of knowledge contained in the writers of those nations. This knowledge he particularly displayed in his public instructions as a teacher. Of his merits, in the immediate exercise of the duties of his profession, it is unnecessary to enter into any minuteness of detail. To his comprehensive knowledge, he added a patient attention to the safety of those committed to his care, and ever retained a high sense of the responsibility attached to the medical character. To an address the most engaging, from a happy union of dignity, respectfulness, and ease, was added a gravity of deportment that evinced a due concern for the distresses of those whom he was called upon to relieve. The kindred sympathy which his feelings constantly manifested, and the encouragement and consolation which the sensibility of his heart and the resources of his cultivated mind always supplied, enabled him to discharge the double duties of the friend and physician, and alike to minister relief to the afflictions of the mind, with no less efficacy than to the diseases of the body."

"The distinction which Dr. *Miller* attained did not depend upon his acquaintance with those branches of knowledge only which belong to his profession; they indeed were the objects of his pri-

mary attention, but there were other objects of which he was far from being neglectful. Believing that liberal and elegant studi s give additional lustre to character, and ennobl professional reputation, he devoted a considerable portion of his time to the acquisition of general science and the ornamental parts of literature. From his writings, an idea may be formed of his literary qualifications, and his various accomplishments as a scholar. Their chief object was a defence of the doctrine of the domestic origin of yellow fever, and the non-contagious nature of that disease; a doctrine of which he and Dr. *Rush* are acknowledged the most zealous and successful advocates."

——————————si Pergama dextrâ
Defendi possent, etiam hâc defensa fuissent.

"We have already discussed the subject at some length in the preceding volumes of the Register; we have stated our opinions with an earnestness arising from the deepest conviction of their correctness, and we believe that the facts and arguments we have adduced fully justify the matter of our remarks. In the warmth of discussion some hasty expressions may have escaped us; but we recant not an iota from any thing we have said material to the controversy."

"But however highly Dr. *Miller* was to be ad-

mired for the endowments of his understanding and his various attainments; the sentiments of affection and esteem are more forcibly excited by the exalted qualities which adorned his moral nature. In every relation of life, both public and private, he was uniformly guided by principles of the purest integrity. No man seems to have been more sensible of the dignity of his profession, and no one was ever more guarded lest that dignity be sullied. In his political opinions he was uniform and decided; yet the spirit of party never so far influenced him as to become the mountebank politician. Such conduct he considered incompatible with the character of a physician. His fellow citizens manifested a grateful sense of his worth, and appointed him for a series of years to an office of high respectability. Despising the low artifices by which many obtain professional practice, he was distinguished for his fine sense of propriety and honour in his intercourse with his brethren of the faculty. The writer of this imperfect sketch, who has often witnessed his delicacy in this respect, would do injustice to his own feelings were he not to state, that his deportment conciliated the affection of all, and is worthy of universal imitation. As a philanthropist, he exercised an extensive charity to the poor in gratuitous medical services. It were needless to dwell upon his character, as displayed in the circle of his immediate friends, whom the ties of consanguinity, or whom

similar inclinations and pursuits had united in the bond of friendship. He evinced all the energies of social affection; he loved with all the warmth of fraternal kindness."

Nor can the writer of this sketch deny himself the pleasure of inserting the following tribute of respect, from the pen of *William Dunlap*, Esq. one of the earliest acquaintances and friends whom Doctor *Miller* gained on removing to *New-York*. It is extracted from a literary work of real merit,* of which he is the conductor.

"Few men have passed through life more free from the frailties of our nature, than Doctor *Edward Miller*. Few men have possessed so many virtues, so pure, so strong, and so unclouded."

"Of his talents and acquirements as a physician I have spoken; but his praise stops not there. His kind solicitude, his patient attention, his sympathizing with the sufferings of those whom duty and feeling prompted him to relieve, were as valuable to the sick as his skill. He did not feel a pulse and look at a tongue, with the affected gravity of sage stoicism, then write a prescription, and hurry to the next patient upon the list; but he tenderly inquired and anxiously sought for the

* *Monthly Recorder.* Vol. I, p. 10.

seat and source of pain; and while his dignified deportment and easy manners conciliated the mind of the sufferer, the interest he so obviously took, inspired confidence, and tended more to restore hope and health, than even the medicine his experience recommended. To the convalescent, his visits were particularly useful, for there is nothing so cheering to the tedious hours of a sick-room, as the animating conversation of a beloved physician, who with the news of the day or the anecdote of the drawing-room, mingles the observations of the philosopher, and the criticisms of the man of taste. All this, Doctor *Miller* brought to the chamber of the recovering patient, to perfect the cure his skill and his tenderness had begun."

"As a literary man, Doctor *Miller* stood high. With a mind uncommonly quick to perceive, to discriminate, and combine, and equally powerful to retain, he had acquired a mass of well-selected and well-arranged knowledge, which he communicated in a style of attic purity and elegance."

"His habits were those of the strictest temperance. His appearance indicated that neatness and praise-worthy attention to dress, which corresponded with the purity of his mind, and the unvaried propriety of his manners."

"His manners were truly those of a gentleman.

Unassuming without any marks of timidity or *mauvaise honte;* reservedly polite with those whom he did not know, or whom he knew to be unworthy of his confidence; but frank and open as the day to those with whom he felt the sympathy of congenial intellect. His conversation, though easy, suffered a little from a hesitancy which appeared to have originated in a scrupulous delicacy of taste respecting the choice of words and phraseology. Delicacy, in every part of his character, was a prominent feature: a feature indispensably necessary in the character of a gentleman."

"Doctor *Miller* was never married. His domestic circle were his beloved brother and sisters and their children. His attachment to his relatives increased to the day of his death. He lived for his friends and for the world, without a thought of accumulating wealth, at the same time knowing that wealth comparatively great to the wants of a philosophic mind was secured to him. His domestic arrangements were characteristic, and his apartments were ornamented by the indications of his pursuits; every table and sofa displaying manuscripts, pamphlets, and volumes, collected by his industry, or flowing as tributes to his talents."

"Every class of men joined in sympathetic regret, and in mournful testimonials to his superiour

worth. The assemblage of citizens, who attended to pay the last tribute of love and respect to his mortal remains, was numerous beyond example, except in the instance of the funeral of General Hamilton, whose death not only excited an extraordinary sensation, from the loss of a great and distinguished military and political leader, but from the manner and cause of his dissolution. In the instance I am recording, the uncommon concourse, not only of spectators but of mourners, was unexpected; for the tribute of sorrow was paid to a man whose actions were not, like Hamilton's, exposed to the gaze of millions, but were confined to the abodes of sickness or the retreats of meditation. The expression of grief was strong and universal: but there were hearts who felt the privation too keenly for expression. They had lost the best of friends and the best of brothers."

After this honourable testimony, from so many sources, but little is left to be added, even by the pen of fraternal partiality. A few additional remarks, however, will be attempted, chiefly with the view of enlarging several parts of the portrait which have been already sketched, and which appear worthy of being contemplated a little more distinctly.

The uniform *integrity* and unsullied *honour* of Doctor *Miller*, have been already noticed in a cur-

sory manner, by several of his panegyrists. They were, indeed, peculiarly exemplary, and worthy of imitation. From his earliest youth, he appeared not only to abhor every thing directly and openly dishonest; but also recoiled, with the most delicate sense of moral obligation, from every species of intrigue and underhanded dealing. If any measure which approached to this character were proposed in any association of which he was a member, he never failed to express, in some way, his entire disapprobation of it, and utterly to decline taking any part in its execution. Nor could any thing more decisively induce him to take a final leave of such an association than the discovery, that it was beginning to be the theatre of cabal, or of any kind of crooked policy.

This quality which appeared in all the social and professional conduct of Doctor *Miller*, shone with peculiar lustre in his *political* character. He was a decided and uniform Republican. That is, he was a warm friend to popular and free government; and approved, in the main, of those administrations which have successively swayed the counsels of our country for the last twelve years. Nor was he backward to avow this. Though characteristically prudent and cautious, he made no secret of his political opinions. In all cases in which he was called to speak or act, it was with the most unreserved openness and decision. Yet it

may safely be asserted, that he never lost a friend from political considerations. He maintained his opinions with so much mildness, and deference to those of others; so carefully avoided every thing justly offensive, either in speech or action; and treated those who differed from him with so much urbanity, that animosity was disarmed in his presence. He seldom attended political meetings; because he hated strife and violence. He never harangued on politics in porter-houses or club-rooms; because he had too just a sense of the principles of free government, and too much self-respect, to adopt this method of propagating his opinions. He was never heard to impute dishonest views or motives to political men, unless in cases of the most evident and unquestionable wickedness. By far the greater number of those friends with whom he maintained the most intimate and affectionate intercourse, and whose unbounded confidence he enjoyed, embraced a different creed on this subject from himself. Seldom, very seldom, has there been seen a more pleasing example than his conduct afforded, of that deportment as a politician, which, without relinquishing principle, cherishes peace and good will; and which, if it were universal, would banish party violence and intolerance from the earth.

Doctor *Miller's delicacy in conversation* has been seldom equalled; never surpassed. Nothing ever

escaped from his lips, even in his most unreserved moments, to which the most refined and scrupulous might not listen without offence. This was the case, even in those periods of his life when he was less under the influence of religious principle, than during its later stages. To say any thing which might tinge the cheek of modesty, or wound the ear of piety, he considered as unworthy of a gentleman, as it was criminal.

Nor was his *temperance* less conspicuous than his delicacy. He not only avoided the use of *ardent spirits* with a scrupulousness, which to some might appear excessive; but he was unusually sparing and even abstemious in the use of every kind of strong drink. He carefully avoided the use of *tobacco*, in every form, not only as an odious and unhealthful practice; but also as a most insidious provocative to the love of drinking. Nor was his temperance confined to a single class of stimuli. It was no less conspicuous and exemplary with respect to all the indulgences of the palate. The writer has no recollection of having ever seen a man, especially one who, from his public station, was called to mingle so much with all classes of society, who was more uniformly rigid, or who exercised a more sacred and successful self-command, with respect to this point, than *Edward Miller*.

On another occasion, a still longer time before his decease, at the house of a pious friend, after considerable conversation on serious subjects, he remarked, with energy and feeling, "that he was "fully convinced, no man could enjoy real, solid "happiness in this world, until he was brought "cordially to embrace the Gospel of Jesus Christ, "and humbly to repose in his atoning blood, and "his precious promises, as the hope of his soul."

A few weeks before his own decease, he lost by death a favourite Nephew. The unusual seriousness which he manifested on this occasion; the interest which he appeared to take in the religious exercises which attended the mournful bereavement; and the peculiar tenderness of feeling which he discovered in referring to the eminent piety and heavenly blessedness of his honoured parents, in following the remains of his little relative to the grave, will never be forgotten by those who intimately witnessed them.

Accordingly, during his last illness, when he was, for some days, apparently convalescent, the Bible was almost the only book, which he attempted to read. From the hour in which he was apprehended to be in danger, he was incapable of either reading or conversation.

The only remaining feature of Doctor *Miller's*

character to which any reference will be attempted, is the singularly engaging and exemplary manner in which he recognized the duties of *domestic relation.* His filial and fraternal affection can never be too much praised.—But on this subject the writer of the present sketch dares not trust his own feelings. He has seen so much, and experienced so much of the affection and kindness of which he speaks, that if there be any department of his undertaking in which he has reason to impose a double guard upon himself, it is here. And after all, he has little doubt that a representation which should do nothing more than justice to the memory of his beloved Relative, would be considered, by those who were unacquainted with that Relative, as extravagant. He is persuaded, however, that those who knew him best, will be most ready to justify the strongest delineation of this part of his character.

DISSERTATIO MEDICA,

INAUGURALIS,

DE

PHYSCONIA SPLENICA.

QUAM

SUB MODERAMINE VIRI ADMODUM REVERENDI

D. JOANNIS EWING, S. S. T. P.

UNIVERSITATIS PENNSYLVANIENSIS PRÆFECTI;

EX CURATORUM PERILLUSTRIUM AUCTORITATE,

NEC NON

AMPLISSIMÆ FACULTATIS DECRETO,

DEO MAXIMO ANNUENTE,

PRO GRADU DOCTORATUS,

SUMMISQUE IN MEDICINA HONORIBUS ET PRIVILEGIIS RITE

ET LEGITIME CONSEQUENDIS; ERUDITORUM

EXAMINI SUBJECTAM SUSTINUIT

EDVARDUS MILLER, M. B.

DELAVARENSIS,

SOCIETAT. MED. DELAVARENS. SOD

EJUSDEMQUE A SECRETIS,

AD DIEM 23. JULII, HORA LOCOQUE SOLITIS.

L'impatience du mal, l'amour de la vie, l'horreur de la mort, sentiments aussi naturels que celui de notre existence, firent chercher aux hommes la guerison de leurs maux.

GUIARDIN

VIRO EXCELLENTISSIMO

JOSUÆ CLAYTON,

ARMIGERO,

REIPUBLICÆ DELAVARENSIS

PRÆSIDI DIGNISSIMO,

AD TANTUM HONORIS FASTIGIUM,

MERITIS, AC VIRTUTIBUS,

EVECTO,

PROPTER INSIGNEM IN RE MEDICA

SCIENTIAM AC PERITIAM,

ET AMICITIAM ERGA SE SINGULAREM:

NEC NON

VIRO CLARISSIMO

MEDICO CELEBERRIMO,

JACOBO TILTON, M. D.

SOCIETAT. MED. DELAVARENSIS

PRÆSIDI,

SOCIETAT. PHILOSOPHICÆ AMERICANÆ

SOCIO,

OB AMICITIAM INTEMERATAM, QUA SE,

AB INITIO USQUE STUDIORUM, FUIT DIGNATUS,

ET PROPTER MAGNA IN SE, SUOSQUE,

COLLATA BENEFICIA;

DENIQUE

VIRO ORNATISSIMO

NICOLAO WAY, M. D.

SOCIETAT. MED. DELAVARENSIS

E CENSORIBUS,

SOCIETAT. PHILOSOPHICÆ AMERICANÆ

SOCIO,

VIRTUTIBUS, QUÆ CIVEM, HOMINEMQUE

EXORNANT,

NON MINUS QUAM ERUDITIONE,

AC SCIENTIÆ AMORE, INSIGNI;

ARTEM HIPPOCRATICAM

SUMMA ET MERITA CUM LAUDE,

APUD WILMINGTONIENSES EXERCENTI;

HANC DISSERTATIONEM MEDICAM INAUGURALEM,

UT OBSERVANTIÆ SUMMÆ TESTIMONIUM EXIGUUM,

SACRAM ESSE VOLUIT

AUCTOR.

DISSERTATIO MEDICA,

INAUGURALIS,

DE

PHYSCONIA SPLENICA.

INTER morbos, quibus gens humana vexatur, quidam, præ aliis, attentionem medicorum merentur. Ex effectibus, vero, quos edunt, Dolor et Mors, procul dubio, gravissimi sunt. Hinc morbi, quos comitatur dolor acerrimus, et quibus est proclivitas in mortem præceps, humano generi nunquam non terrorem incutiunt ; atque hinc homines, omnibus in seculis, medicinam, plus minus, excoluerunt. Hisce quoque morborum effectibus, sævis quidem et lugendis, conatus validiores et indefessos, atque ardorem pene incredibilem ad medicinam promovendam et augendam, debemus ; ex his, denique, ut, quodam sensu, tuto affirmare liceat, proveniunt honores omnes, et emolumenta quæ ars nostra salutifera est unquam assecuta.

Etsi dolorem lenire, et mortem minus frequentem reddere, sit meta optatissima, atque dignissima, quam Ars Medica attingere possit ; tamen

alia sunt, eaque gravissima, ad quæ medicum semper respicere oportet. Mala quibus laborant homines leniora, quæ eos ad vires corporis alacriter et strenue exercendas minus aptiores reddunt; etiam quæ corporis formam justam, pulchram et concinnam vitiant; quæ, denique, pro ore rosaceo, et lumine sanitatis purpureo, vultum pallidum et figuræ maciem inducunt; aliaque bene multa, levioris quasi momenti, conatus artis nostræ optimos postulant.

Morbus, de quo nunc agendum est, plerisque saltem in casibus, neque periculum, neque dolorem gravem minitatur. Satis vero amborum aliquando gignit, adeo ut eum attentione medicorum esse indignum, nequaquam concludere liceat.(*a*) Exempla hujus mali, hac in regione, frequentissima; deformitas fæda quam corpori humano inferre solet; indoles ejus chronica, molesta, atque accumulans; observationes innumeræ quæ ostendunt quam sit pertinax et sanatu difficilis; et denique hoc argumentum accuratius cognoscendi, studium, occasionem dedere, cur id, in præsentia, seligendum putavi.

Quam difficile sit hujus tentaminis argumentum, haud equidem ignoro, neque minus, quam

(*a*) Strack. Observ. Med. de Febr. Interm. apud Duncani Comment. Decad. 2. Vol. 2. P. 132.

sit mihi curta supellex ad difficiliora, ea qua par est, perspicacitate, tractanda. Aggressus vero fui, non tam spe illustrandi obscura, consiliove commenta nova proponendi, quam ut probabiliora de quæstione medicinæ dubia perdiscere conarer.

Morbi genus, quod speciem, de qua nunc agitur, inter multas alias sibi invicem dissimiles, complectitur, apud Nosologos(*b*) *Physconia* appellatur. De omnibus speciebus, ad hoc genus pertinentibus, tractare, a proposito hujusce dissertationis alienum foret. *Physconiam* vero *Splenicam* peculiarem sibi naturam vindicare, atque idcirco tractationem seorsum mereri, ostendere conabor.

Ex morbis, qui chronici appellantur; non pauci sunt, qui ægre, difficilime, et sæpe infeliciter, a medicis curantur. Mala, enim, quæ a languido humorum motu profluunt, eo lentius et difficilius sanantur, quod omnes simul naturæ vires

(*b*) Hujus vocabuli Etymologia minime in dubio est. *Physconia* a ΦΥΣΚΩΝ, ventricosus, derivatur; quod ab ΦΥΣΑΩ inflo, deducitur.----*Ptolemæus Euergetes* secundus hanc appellationem adeptus est. *Strabo* eum *Physconem* nominat hoc est *ventricosum*. Erat enim et vultu deformis, et statua brevis, et sagina ventris non homini, sed belluæ similis.—Justini Lib. xxxviii. cap. viii.—Antient Universal History, Vol. 9. P. 98. Tit. Liv. &c.

deficiunt. Quæ, vero, a nimio humorum impetu proveniunt, iis aut mors cita, aut victoria læta, brevi finem imponit.(*c*)

DEFINITIO.

Celeberrimi auctores, *Sauvagesius*, *Linnæus*, *Vogelius*, et *Cullenus*, *Physconiæ* et *Hyposarcæ* titulis, varie, in suis egregiis operibus nosologicis, id genus morbi, cujus hæc est species, de qua nunc agitur, definiverunt.

Definitio Sauvagesiana, viz. " Intumescentia abdominis a partibus solidis, sine graviditate et fluctuatione."

Ut Vogelio placit, " Intumescentia abdominis longa, a magnitudine, habituve visceris mutato."

Linnæana Definitio, viz. " Abdominis nodosa intumescentia."

Inter memoratos nosologiæ cultores illustrissimos, nemo hunc morbum tam bene definivit quam doctissimus *Cullenus*, qui characterem suum verbis quæ subsequuntur tradendum curavit. " Tumor quandam abdominis partem po-

(*c*) Greg. Conspect. Med. Theoret.

tissimum occupans, paulatim crescens, nec sonorus nec fluctuans."

Sed in Physconia Splenica ordinanda, his auctoribus clarissimis dissentire cogor.—Pace, itaque, horum, aliorumque haud parvi nominis, quos nemo magis quam egometipse miratur, quod mihi videtur, ea verecundia qua decet, nunc paucis verbis proferam.

Hoc malum ex febribus intermittentibus originem ducere fere semper videtur. Omnium medicorum consensu, qui hunc morbum, hac in regione, frequentissime observant, æque ac observationibus propriis multis, in hoc propositum spectantibus, rem ita se habere, vix dubitare possum. Exempla ejus rarissima, ex aliis causis, ut videri possit, oriundi, ad evertendam opinionem tam verisimilem, haud facile admittere licet. Casus hujusmodi, febribus nimirum intermittentibus non manifeste prægressis, aliquando vidisse, lubenter fateor. Tales vero plerumque ea anni tempestate, scilicet autumno, qua febres nostræ endemicæ grassari solent, oriuntur; et ergo cognationem cum illis plane ostendunt. *Physconiam* enim *Splenicam* posse provenire ex ejusdem diatheseos minore gradu, quam qui ad febres intermittentes revera inducendas, sufficiat, pro comperto habeo.

His positis, si normis nosologiæ methodicæ obtemperare velimus, Physconiam Splenicam, ut speciem morbi distinctam, agnoscere neutiquam licebit. Hoc consilio inductus, et minime mearum virium fiducia suffultus, definitionem, seu potius descriptionem sequentem nunc aggredior.

Febrium intermittentium plerumque sequela; tumor in regione Hypochondrii sinistri exortus; paulatim crescens; durus; sæpe indolens; nec sonorus, nec fluctuans; quandoque longe et late diffusus; et diutissime permanens.

HISTORIA.

Hic morbus infantes recens natos rarissime occupat; pueros, vero, potissimum a tempore, quo a lacte depelluntur, ad ætatem puberem, sæpissime infestat. Qui pubertatem superaverunt, minorem proclivitatem ad hoc malum quotannis, usque ad annum vigesimum, aut circiter, ostendunt. Ætate provectiores aliquando, sed rarius, vexare solet. Quibus est corporis constitutio debilis, laxa et delicata; et fœminæ multo frequentius quam mares, huic morbo objiciuntur. Qui victu utuntur tenui et parco, et qui variis inopiæ difficultatibus et sordibus premuntur, huic malo maxime fiunt obnoxii. E contrario, qui cibo vescuntur pleno, nutriente et lauto, et qui rebus

secundioribus fruuntur, ab illo, aliqua saltem ex parte, expertes vivunt.

Morbus plerumque invadit autumno, vel, ea anni tempestate, qua intermittentes grassantur; quibus fere semper præeuntibus, tumor parvus, et vix induratus, in Hypochondrio sinistro exoritur. Paulatim crescit, et tandem haud raro molem ingentem adipiscitur. Incipiens adhuc et parvus, plerumque parum molestiæ facessit; aliquando vix percipitur; ingravescente vero morbo, sensationes injucundæ haud paucæ ægroto occurrunt.

Idem, diu, nonnullis in casibus, sine dolore, manet. Tumore, autem, magnitudinem molestam adepto, viscera vicina magnopere comprimuntur (*d*); respiratio, exercitatione potissimum incitata, redditur anhelosa; et si sanguinis circuitus valde incitetur, dolor sed raro vehemens diuturnusve, ægrotum invadit. Cum vero morbus inveteraverit, sensus gravitatis et tensionis, maxime injucundus, eum sæpe inquietat. Febris levicula, sæpe sub vespere accedens, aliis symptomatibus haud raro adjungitur. Æger febribus intermittentibus obnoxior fit, quæ deinde solito

(*d*) Casum nuperrime vidi, ubi Physconia Splenica magnitudinem ingentem adepta est, viscera vicina compressit, usque ad Herniam scrotalem inducendam.

vehementiores et pertinaciores evadunt, tumorem adaugent, et secundæ valetudinis fundamenta ex toto labefactant. Debilitas quoque, languor, lassitudo, torpor, vultusque pallidus et plumbeus, fere semper, sed variis gradibus, hunc morbum comitantur.

Hic tumor, quibusdam in casibus, molem mirabilem adipiscitur(*e*). Illust. Van Swieten duo exempla memorat, ubi Splen paulatim adauctus est usque ad magnam abdominis partem implendam, et in pelvem etiam prolabendum(*f*). Et M. de la Motte casum recenset hujus mali, adeo tandem ingravescentis, ut spatium, hypochondrium sinistrum inter et axillam, fere totum occuparet(*g*).

Symptomata Dyspeptica, eaque haud raro gra-

(*e*) *Theoph. Bonet.* rapporte d'après *Hypol. Boscus*, l'ouverture d'une femme attaquée d'un squirre à la rate, qui s'etoit tellement accru qu'il remplissoit l'abdomen, et pesoit trente trois livres. La malade avoit porté cette maladie pendant dix-sept ans, vaquant d'ailleurs à ses occupations. Nos histoires sont remplies de pareils exemples touchant lesquels je renvoye pour abreger, à la lecture de *Schenkius*, du *Sepulchretum de Bonet.* et de la *Medecine Septentrionale*, Nosologie de Sauvages Tom. 11. P. 295.——

(*f*) Comment. in Boerh. Aphorism. Vol. 9. P. 325.

(*g*) Traité complet de Chirurgie, Tom. 11. P. 169, 170.—

vissima, et generis etiam pertinacioris, ægrum frequenter vexant. Hypochondriasis, quoque, sæpe oritur a tumoribus in liene aut hepate, qui interdum post febres intermittentes, male curatas, observantur. Hujusmodi tumores liberum sanguinis motum in abdomine plane impediunt, ideoque congestionem producunt(*h*).

Exempla non desunt, ubi Physconia Splenica Hydropem, varii generis, induxisse videtur (*i*); rem vero frequenter sic se habere, vix dicere ausim.

Sunt qui credunt hoc malum, paucis in casibus, in schirrum immedicabilem transire, qui tandem, sed raro in carcinoma (*k*) desinit, nonnunquam subito lethale, erosis scilicet magnis vasis sanguinem vehentibus, plerumque vero lentam et miserandam tabem, cum febre hectica certissime exitiali, inducturum (*l*).

Hoc malum, quamvis fædum et molestum,

(*h*) Gregor. Dissertat. Inaug. De Morb. Cæli. Mutat. Medend. P. 128.

(*i*) Illustr. Pringle's Diseases of the Army.

(*k*) Drelincourt. Dissert. Anat. Pract. de Lienosis capt. xiv. Opusc. Omn. P. 763.

(*l*) Conspect. Med. Theoret. Vol. 1. P. 401.

aliis morbis, gravioribusque incomitatum, mortem ægroto haud sæpe affert. Et systema forsan nullum morbum tam diu, muneribus vitæ usitatioribus tam parum turbatis, aliquando etiam usque ad senectutem, tolerare potest.

DIAGNOSIS.

Nullum morbum, præter Physconias alias, novi, cum quo hic potest confundi. Et si locum, unde tumor exortus est, attente observaverimus, non est in his cur dubitemus.

Graviditatem, quoque, quibusdam in exemplis, hunc morbum haud parum referre, nonnulli credunt. Intumescentia vero abdominis gravidæ, ab hypogastrio incipit, opus generationis subsequitur, et partu terminatur. Cervix uteri curtatur; fœtus vivus inter quartum et quintum mensem sentitur; et dum catamenia supprimuntur, mammæ, usque ad lactis eruptionem, tumescere solent.

CAUSÆ REMOTÆ.

Hæ vero in duplex genus distingui solent. Ad primum genus pertinent causæ, quotquot corpus morbo opportunum reddunt; scilicet ut, admota causa excitante, morbum suscipiat. Ad alterum genus pertinent quæ vocantur potentiæ

nocentes, vel causæ excitantes; res, scilicet, quæcunque in corpore jam proclivi facto morbum excitare possint (*l*).

Inter ea, quæ proclivitatem tantum ad hunc morbum faciunt, recenseri debent ætas puerilis, constitutio corporis debilis, laxa et delicata, vita otiosa et sedentaria, sexus sequior, regio paludosa, victus tenuis et parcus; omnia denique, quæ corpus debilitant, et causis excitantibus affici obnoxium reddunt.

Hujus mali causæ excitantes præcipuæ, fortasse solæ, sunt febres intermittentes et remittentes, varii generis, et atmosphæra exhalationibus palustribus inquinata. Auctores præclaros et omni laude dignos, hanc observationem silentio præterivisse, aut, hac de re, aliter omnino sensisse, ex casibus sequentibus, multisque aliis, qui hic recenseri possent, constare videtur.

Un enfant âgé de neuf ans, qui avoit été delivré d'une ascite par les remèdes purgatifs, fut depuis, atteint de tres vives douleurs dans le basventre; enfin, il séleva dans l'hypochondre gauche, une tumeur considerable et douloureuse sensible à l'œil, et aù toucher. A l'ouverture du cadavre on apperçut, outre plusieurs autres choses, que la

(*l*) Greg. Conspect. Med. Theoret. Vol. 1. P. 23.

rate etoit d'un volume extraordinaire et avoit changé de figure ; qu'elle s'élevoit sur l'estomach et comprimoit le foie ; que sa couleur et sa consistance etoient semblables à celles du foie ; il n'y avoit ni squirre, ni ulcere, ni inflammation ; mais elle etoit obstruée et engorgée par le sang, qui y abordoit en plus grande quantité qu'il n'en sortoit.(*k*)

Dans un enfant mal gouverné par sa nourrice, qui, au lieu de lait, lui faisoit manger des choses indigestes pour son âge, il se forma une grande quantité d'un suc lent et visqueux, qui remplissoit tellement la capacité etroite des vaisseaux de la rate, que ce viscère, qui etoit prodigieusement gonflé, distendoit tout l'abdomen, et causoit une maigreur universelle ; l'obstruction ayant été levée et la surabondance des sucs diminuée, la rate se desenfla si manifestement, qu'il parut plus clair que le jour, que cette tumeur n'étoit pas tant occasionnée par la mauvaise conformation, que par la surabondance des alimens.(*l*)

Physconia Splenica, his in exemplis, ex febribus intermittentibus provenisse, haud equidem dicitur ; febres vero istiusmodi præivisse, aut malum in regione paludosa, his simul grassantibus, vel autumno, atmosphæra exhalationibus palustribus inquinata, ortum esse, minime abnegatur. Et

(*k*) (*l*) Nosologie de Sauvages, Tom. 3. P. 295.

quicunque secum reputaverit, quoties hoc malum ab intermittentibus manifeste originem ducit, et quam raro ab aliis causis, ei satis patebunt rationes, quæ nos in hanc sententiam cogunt. Tamen fateri oportet, multum adhuc requiri, ut hæc opinio pro certa et stabilita doctrina recipiatur. Vera et certa forsan haud mihi contigit novisse; at veritatem summo studio indagavi; et vero similia, ut speratur, assecutus sum. "Sequimur, enim, probabiliora; nec ultra quod verisimile occurrit progredi possumus, et refellere sine pertinacia, et refelli sine iracundia, parati sumus."(*m*)

CAUSA PROXIMA.

Cum sit plenissima, et perfectissima proxima causa, quippe quæ presens morbum facit, sublata tollit, mutata mutat; summa diligentia conandum est, ut hæc res clare elucescat.

Priusquam vero ad causam proximam tradendam progrediamur, pauca sunt præmittenda de splenis fabricatione, de variis et miris modis, quibus natura provida operam dedit ad motum sanguinis per hoc viscus retardandum, et de proclivitate ad hoc malum necessaria, quæ exinde nascitur.

(*m*) Cic. Disput. Tusculan. Lib. 2.

Splenis fabricam sive texturam, laxam, teneram et permollem(*n*) esse ; et ei majorem sanguinis copiam, quam aliis visceribus, pro rata parte, deferri,(*o*) a Physiologis omnibus, hodie conceditur. Quam proclivis sit, ad turgendum, ab intumescentia ejus, vacuo ventriculo, naturaliter et constanter oriunda, quæ tamen, post pastum, in minorem molem statim redigitur, colligere licet.(*p*)

Arteria Splenica, ab Cæliaca oriens, multo amplior(*q*) est, pro ratione et molis et ponderis hujusce visceris, quam in aliis partibus observatur ; tunicis etiam iis aortæ crassioribus instruitur ;(*r*) et sanguinis per eam motus, propter cursum ejus serpentinum, et parietum duritiem raram, lentissimus evadit.(*s*) Vena Splenica,(*t*) et tela quoque ejus cellulosa,(*u*) fabricam, multo quam in aliis visceribus molliorem et ad distentionem aptiorem, ostendit.

Difficilis sanguinis transitus ad Hepar per *ve-*

(*n*) Haller. Prim. Lin. Physiol. Vol. 2. P. 99.—Hewson apud Duncani Comment. Vol. 1. P. 100.

(*o*) Haller. ibid. (*p*) Ibid.

(*q*) Haller. Prim. Lin. Physiol. Vol. 2. P. 99.

(*r*) Ibid. (*s*) Ibid. (*t*) Ibid. (*u*) Ibid. 101.

nam portæ; at, præ omnibus, lentior ejus motus, per splenem ipsum, proter auctam vasorum, prout in ramos dividuntur, capacitatem, quod hoc in viscere insigniter obtinet;(*w*) his omnibus attente consideratis, causæ retardationis potentissimæ apparebunt.

Sanguis, in vena splenica, liquidissimus reperitur;(*x*) et fere nullam ad coeundum proclivitatem ostendit.

Hæc, quicunque rite consideraverit, is bene perspiciet, labore quam strenuo natura conata est motum sanguinis per hoc viscus retardare; et simul illi persuasum erit talem retardationem maxime necessariam esse, ad consilia gravissima in œconomia humana perficienda.

Ratio fluiditatis, quæ tam insigniter in sanguine splenico obtinet, a motu ejus tardissimo petenda est. Hæc remora eum longius a pulmone cohibens, istam ad coeundum proclivitatem, quæ ab circuitu per pulmonem provenit, minuere videtur.

" Aeris ad sanguinem extra vasa aditum, ejus coagulationem promovere, neutiquam dubitandum est; cujus rei nullam explicationem eo ten-

(*w*) Ibid. (*x*) Ibid. 102.

tabo, quod ad propositum nostrum veram eam et observatam esse, suffi it. Tenuem quoque pulmonum membranam non sufficere ad mutuam aëris et humorum inter se actionem prohibendam, constat;(*y*) unde sanguinem, qui pulmonalem circulum transfluxit ad coeundum, cœteris paribus, sanguine, qui illic mutationem non subiit, promptiorem esse, colligimus; ergo sanguinem, omni in exemplo, ubi, pro brevi etiam temporis spatio, beneficiis ab circuitu per pulmonem oriundis, privatur, fluidum dissolutumque esse, necesse foret; quæ conclusio innumeris observationibus nititur;(*z*) ita sanguis venosus, quam arteriosus, licet hic majori motui quam ille objicitur, minus tamen ad coeundum proclivis est.(*a*) Incisis submersorum corporibus, liquiditas in sanguine insignis reperitur; venæ portæ sanguis, etiam minus quam venosus, ad coeundum promptus est;(*b*) san-

(*y*) Vide Halesii Hæmastat. Priestley's Observations on Air, &c. &c.

(*z*) Vide Lond. Med. Transact. Vol. 3. P. 9. Dr. Langrish's Phys. Exper. on Brutes, P. 66. 145. Vide Greg. Horstii junioris op. tom. 1. P. 136. 142. In homine fumo carbonum necato, sanguis fuit solutus. Sagar 555. Morgagni de caus. et sed. morb. Lib. ii. Exp. xv. P. 131. &c.— Bonet. Sepulchret. Anat. Lib. ii. Sect. i. obs. xviii. &c.

(*a*) Dr. Stevenson Med. Ess. Edin. Vol. 5. part ii. 332.

(*b*) Prælect. Celeberrim. Prof. Monro.

guis in embryone quam in matre fluidior est.(*c*) Somniculosorum animalium sanguis per totam hyemem tenuis dissolutusque permanet,(*d*) quia circumfluxio quædam sine respiratione aliquamdiu conservatur."(*e*)

His rebus præfatis, ad causam hujus morbi proximam reddendam, tandem progredimur. Eam, vero, ex humoribus congestis, et languido et impedito eorum per splenem motu, constare, omnibus satis innotuit.

Retardationibus, quas natura sanguinis motui hic imposuit, probe consideratis, hoc malum, nostris in regionibus palustribus, frequentissime occurrere, nil est cur miremur.

Causa proxima sic posita, ad modum indagandum, quo hæc congestio, et motus sanguinis languidus provenire possint, nunc progredimur. Congestio, ex humoribus in vasa splenica accumulatis et impactis (*e*,) vel ex iis in telam reticu-

(*c*) Martini Lister. Dissertatio de Humoribus, cap. i. 14.

(*d*) Lister—Maclurg's Treatise on the Bile. Hewson, &c.

(*e*) Dissertat. Inaug. M'Donnel. 1784.

(*e*) Dilatatio, Ενρυσμα, cum parietes cavitatis, nimium inter se distantes spatium justo capacius circumscribunt. Obtinere potest in quibuscunque cavis corporis, majoribus, minor-

latam vicinam effusis (*f*), plerumque oritur. Utramque causam, multis saltem in casibus, conjungi, satis verisimile videtur.

Exemplis in levibus et incipientibus, fluidorum coacervatio et impactio sola fortasse in vitio sint. Cum vero malum inveteraverit, et molem enormem sit adeptum, effusionem, et quidem copiosissimam, accedere, minime in dubio esse videtur. Argumentis quæ subsequuntur, in hanc sententiam ducor.

1mo. Moles magna, et pene incredibilis, quam hic tumor nonnunquam adipiscitur, nos vetat, eam tribuere ulli vasorum distentioni, quam, parietes, salva integritate et circulatione vitali, admittere possunt.

ibus quorum parietes distentionem admittunt. Oritur autem, si contenta materies majore vi in latera agit distendendo, quam hæc superare contra nitendo queant. Quo facit congesta uberior moles, volumen expansione auctius, impeditus trajectus, impetus advectorum enormis; parietum robur imminutum, aut eorum, quibus a foris fulciuntur, ablatio.

Gaub. Instit. Patholog. Med. P. 85.

(*f*) Ανασομωσις, quæ hic vocatur ostii cavitatis, quod admittit aut emittit, immodica laxatio. Unde fit, ut plus aut aliud quid, quam lex sanitatis exigit, introeat, exeatve. Efficere hanc eadem possunt, quæ dilatationem.

Gaub. Instit. Pathol. Med. P. 85.

2do. Subita diminutio et sanatio, qualem hoc malum aliquando suscipiat, nisi effusio pro vero admittatur, explicationem accipere non potest (*g*).

3tio. Vasorum lymphaticorum in telam Splenis reticulatam hiantium, frequentia insignis; et sanguinis rubri ipsius deprehensio in vasis istis lymphaticis, eum per has vias transire posse, clare demonstrat (*h*).

4to. Ex analogia quam præbet Phlogosis. Effusio, hic, Culleno illustrissimo teste, magnam morbi partem facit. "The tumour, (inquit ille) which appears in inflammation, may be imputed, in part, to the congestion of fluids in their proper vessels; but is owing chiefly to an effusion

(*g*) Vir excellentissimus, *Dr. Clayton*, qui Reipublicæ Delavarensi, summa cum dignitate et virtute, hodie præsidet, sequentem casum mihi mittendum per literas, nuper curavit. A. B. Vir, quadraginta annos, aut circiter natus, Physconia Splenica, magnam abdominis partem occupante e febribus intermittentibus, pertinacioribus, et frequenter redeuntibus, proveniente, viginti annos, vel amplius laboraverat. Correptus Cholera violentissima, et exinanitionibus copiosissimis, plures dies continuatis debilitatus, fere ad extremum reductus est. Convalescens, tandem, Physconiam Splenicam ex toto evanuisse attonitus deprehendit. Dehinc tamen a morbo liber vixit, et adhuc, post plures annos, vivit.

(*h*) Hewsoni Epistola ad Dr. Haygarth, apud Duncani Comment. Vol. 3, P. 91.

of matter into the adjoining cellular texture; and, accordingly, tumours seldom appear but in parts adjoining to a lax cellular texture (*i*).

5to. Liquiditas sanguinis insignis, quæ hoc in viscere observatur, eum facillimum effusu proculdubio reddit.

Quandocunque malum ex humoribus in vasa propria tantum impactis, nascitur, sedem congestionis præcipuam venæ præbent, quippe quæ, in hoc viscere, mollissimæ, et ad distentionem aptissimæ sint. In his quoque vis a tergo parva, et contractio musculorum vicinorum et incumbentium parum efficere potest (*k*).

Quædam corporis conditiones morbosæ, partem causæ proximæ haud parvam faciunt, et hoc malum sæpe multo frequentius et pertinacius reddunt. Præter obstructionem, quæ iter humorum splenicorum impedit, languescit sæpe sanguinis universi corporis motus, imprimis ob debi-

(*i*) First Lines of the Practice of Physic, Vol. I. P. 229.

(*k*) Quicquid causa fuerit, quod sanguis languidius movetur, malum in venas maxime incumbit; nimirum, quia in his sanguinis motus semper tardior est. Hinc varices venarum, et congestiones sanguinis, præsertim in iis partibus, quarum venæ valvis carent, et in quibus motus musculorum sanguinis cursum juvare nequit. Conspect. Med. Theoret. Vol. 1. P. 252.

litatem, torporem, defectum irritationis, veluti excitationis; sicubi vel vires deficiunt, vel non ut decet, excitantur, aut excitari possunt (*l*).

PROGNOSIS.

In eventu hujus morbi præsagiendo, ad ægrotantis ætatem; ad regionem quam incolit; ad corporis constitutionem, sive debilem et laxam, aut robustam; ad morbi tempus; et denique, ad vitæ genus; medicum semper respicere oportet. Si vires vitæ, senio, et morbis prægressis fractæ et exhaustæ sint, præsagium felix vix deduci potest. Regio paludosa malum multo pertinacius reddet, et depulsum sæpe revocabit.— Constitutio corporis laxa, proclivitatem ad hunc morbum perpetuam, et sanationem difficiliorem facit. Quo diutius malum permanserit, eo difficilius est plerumque sanatu. Vitæ genus otiosum, sedentarium et deses, fere semper ad morbum confirmandum augendumque, magnopere confert.

Ætate provectiore, vis nervosa imminuitur; partes corporis solidæ indurescunt; et hinc vasa minutissima coarctantur, et tandem concludun-tur; et motus, et distributio fluidorum maxime impediuntur. Hæc omnia Physconiam Splenicam confirmant, et spem sanationis, magna ex

(*l*) Conspect. Med. Theoret. Vol. 1. P. 251.

parte, adimunt. Sed juveni vegeto, ad exercitationem prompto, et cætera sano, plerumque prosperam sanationem polliceri licebit.

RATIO MEDENDI.

Summis viribus eniti, ad cohortem morborum, qui insanabiles habentur, minuendam, munus est splendidissimum, et utilissimum, quo ars nostra salutifera fungi possit. De ægroti salute desperare, quia mala hujusmodi plerumque cedere nolint, medico sapiente, et qui nihil humanum a se alienum putat, minime est dignum. Hæc ad ægros derelinquendos proclivitas, maximam Medicinæ injuriam intulit, artem nostram debilem et ignavam reddidit, et opprobrium medicorum, per omnia sæcula, exstitit.

Consilia, autem, medendi sunt,

I. Causas remotas tollere.

II. Humorum congestiones expedire, motumque eorum languidum atque difficilem excitare.

III. Corporis totius habitum depravatum corrigere, tonum viresque idoneas systemati reddere.

IV. Morbum recidivum arcere.

I. Quantum ad primum consilium attinet, ei accommodantur remedia roborantia omnia, qualia ad

febres intermittentes et remittentes medendas, nusquam non exhibentur. Inter hæc, Cortex Peruvianus primum sibi locum vindicat. Vires hujus remedii præstantissimi, tam late, et quidem universaliter innotescunt, ut de iis, hoc in loco, disserere, vix sit opus.

Prohibuerunt auctores clarissimi, et, inter alios, Cullenus venerandus ipse, Corticem Peruvianum adhibere, ad febres intermittentes medendas, existente simul congestione firma in visceribus abdominalibus (*m*). Hæc opinio, ex erroribus Pathologiæ Humoralis, proveniens, quantumcunque apud medicos olim recepta, hodie pene exolevit. Et medici maximi nominis, Corticem Peruvianum ad febres intermittentes summovendas, nulla fere ad Physconiam Splenicam ratione habita, quotidie adhibent (*n*).

II. Secundo consilio accommodantur Remedia Roborantia et Stimulantia, fere innumera; quæ,

(*m*) The Bark may be employed with safety at any period of Intermittent Fevers, providing that at the same time, there is neither a phlogistic diathesis prevailing in the system, nor any considerable or fixed congestion present in the abdominal viscera.

First Lines, Vol. 1. P. 207.

(*n*) Dr. D. Monro's Observat. Illustr. Pringle's Diseases of the Army. Dr. Saunders on the Bark.—Cleghorn's Minorca. Lind on Hot Climates.

inter se, tum quod ad cæteras et magis manifestas dotes, tum maxime quod ad vires suas medicinales, admodum diversa sunt. Inter hæc, sequentia, in nostrum propositum, seligenda putavi.

1. Emetica. 2. Cathartica. 3. Mercurius. 4. Electricitas. 5. Ferrum. 6. Cortex Peruvianus. 7. Vinum. 8. Balneum Frigidum. 9. Exercitatio. 10. Frictio. 11. Cæli mutatio.

Emetica, in hujusmodi malis prodesse videntur, partim stimulo suo, ventriculo admoto, perque consensum cum aliis partibus communicato, partim vehemente agitatione et inverso motu ventriculi et superioris partis intestini, partim demum ingente pressura, quæ, inter vomendum, a septo transverso musculisque abdominis valide contractis, omnibus quæ in abdomine continentur partibus datur (*o*).

Vomitiones, quoque, motum sanguinis, in abdomine, sæpe languidum, variis modis haud parum expediunt, partesque affectas probe excitant et agitant. Vomitiones autem, non modo per abdomen sanguinis motum promovent, ejusque viscera stimulant, sed totum genus nervosum quodammodo excitant, et partim hoc stimulo, partim magnis nixibus et agitationibus

(*o*) Conspect. Med. Theoret. Vol. 2. P. 445.

quas efficiunt, pulsus festinant, motumque sanguinis per totum corpus accelerant, et simul æqualem ejus distributionem efficiunt, congestiones aut distributiones abnormes tollunt, et actionem vasorum absorbentium intendunt.

Exemplum genu ex magna synoviæ accumulatæ copia tumefacti, profert accuratus Cruikshank. Magna quantitas salis tartari, pro solubili tartaro errore data, vomitum per quadraginta octo usque horas violentem concitabat. Vomitu finito, postquam ægri stomachus, ex medicamento inflammatus, cito sanus fiebat, tumor genu fere omnino dispersus reperiebatur (*p*).

Ægroto, curæ Joannis Hunter commisso, bubo erat, adeo provectus ut in animo esset, die sequente, eum aperire. Æger interea navem ascendit, ubi nausea correptus, abunde admodum vomuit. Bubone penitus evanescente, auxilii chirurgici nil indiguit (*q*).

Cathartica. Alvi autem purgatio, plena saltem et valida si fuerit, non modo res omnes quæ in intestinis continentur, expellit, sed per stimulum medicamenti iis admoti vis nervosæ derivationem abdomen versus efficit, motumque sanguinis per

(*p*) Cruikshank's Letter to Clare. P. 166.

(*q*) Disser. Inaug. Winterbottom. 1781.

omnia hujus viscera promovet, et actionem vasorum absorbentium excitat atque intendit (*s*).

Mercurius. Hoc remedium præstantissimum eo modo et consilio feliciter adhibetur, ut vasa sanguifera et absorbentia levi vel nullo ptyalismo excitato, stimulet ; sic, enim optime cavetur, ne ægrotantis vires consumantur. In hunc finem Pilul. Mercur. Ph. Edin. eligendæ videntur, præ salibus e mercurio paratis, quippe quæ per alvum se præcipitare solent.

Electricitas. Quantum subtilissima hæc atque mobilissima aura polleat ad schirros discutiendos, ad promovendam rerum variarum absorptionem, etiamque ad callos ossium luxuriantes amovendos, fere omnibus notum. Animalium corpora non modo velocissime pervadit, sed simul validissimo stimulat, sensumque in partibus sentientibus, motumque in partibus musculosis, mirabiliter excitat. In cursu sanguinis languido per vasa minutissima expediendo, vires mirandas ostendit. Cel. Abbas Nollet, qui ingeniose admodum plurima in electricitatis doctrina investiganda, experimenta fecit, aquam guttatim e tubo insulato decidentem, electricitate adeo accelerari, ut plena flueret cursu, perspexerit (*t*). Hoc experimentum ad

(*s*) Conspec. Med. Theoret. Vol. 2, P. 464.

(*t*) Mem. de L'Academ. Royale pour 1758, Vol. 2, P. 241.

vegetabilia et animalia transtulit, quorum perspirationem auctam invenit (*u*).

Observandum, quoque, est, hoc remedium, utcunque validum, parum sæpe prodesse, nisi large adhibitum fuerit, diuque continuatum (*v*).

Ferrum. Hoc inter præstantissima et tutissima eorum remediorum, quæ vi gaudent tonica, merito recensetur. Medicamentum ubique fere paratum, vix longiori usu nociturum, tantulaque portione ad infirmatum hominem reficiendum efficax, haud mediocrem opem ægrotantibus promittit. Devorari potest, vel in particulas minutas limando tritum, vel ad formam rubiginis per humorem et trituram redactum.

Cortex Peruvianus. Nobilissimi hujus remedii usus beneficia maxima in genus humanum contulit. Ex quo genuinus ejus effectus in corpus humanum innotuit, vix ullus quidem, debilis laxæque fibræ soboles, se prodit morbus, quin ad eum illico decurratur. Sed ex repugnantia mira, et quidem perniciosa, quam medici tam diu et pertinaciter ostenderunt, ne Corticem Peruv. experirentur, ad Physconiam, Splenicam medendam, malum id, omnino mite et fugax, cum sit rite

(*u*) Ibid. 248.

(*v*) Greg. Conspect. Med. Theoret. Vol. 2, P. 303.

tractatum, in morbum immedicabilem haud raro mutavit(*w*).

Vinum. Omne genus vini, et magis adhuc meraciores illi latices, *Spiritus distillati* dicti, corpori stimulo sunt certissimo, et gratissimo, et sæpe saluberrimo. Et istiusmodi jam remedia (ubicunque stimulo interno et generali opus est) a medicis multo largius præscribuntur quam olim fieri solebant, et quidem cum insigni ægrotantium commodo.*

Balneum Frigidum. Usus balnei frigidi, pro remedio roborante, tam sæpe præscribitur, ejusque saluberrimi effectus in plurimis morbis tam

" (*w*) This tumour (Physconia Splenica) when large and obstinate, is, he thinks, by no means free from danger. When it admits of cure, this, he thinks, is to be effected by the Peruvian Bark; because its origin and increase depend on the intermittent fever. And while neither internal aperients, nor ointments applied externally, are of any avail, by the use of the Bark it will, he affirms, be completely resolved, if it be not of long standing. And he even alleges, that by long continuance of the Bark, he has known very large tumours of the spleen totally discussed."

Cel. Strack. Observ. Med. de Feb. Intermitt. apud Duncani Comment. Decad. 2, Vol. 2, P. 131.

* Observationibus accuratissimis constat, timulentos rarissime hoc malo laborare.

bene jam sunt noti, ut nemo medicorum de iis dubitare possit.

Exercitatio. Idonea corporis exercitatio, pro remedio roborante, omni laude major est. De modis variis, quibus prosit, utpote omnibus satis notis, non hic est locus dicendi. Pro ægroti viribus atque consuetudine, mitiora vel violentiora exercitationis genera præscribenda sunt.

Labor improbus et assiduus, inter remedia hujus mali efficacissima, primum fortasse sibi locum vindicat. Hinc occupationes quædam, actionem musculorum validam et fere perpetuam postulantes homines iis deditos, et inde victum quærentes, a morbis hujusmodi, immunes præstare, plerumque observantur.(*y*) Et experientia satis constat, hoc malum iis præcipue incumbere, qui vitam ignavam et sedentariam degunt.

Si æger hujusmodi labores, et corporis exercitationes vehementiores, veluti ambulationem, gladiatoriam, cursum, saltationem, et, similia, tolerare nequit; tunc tentanda sunt mitiora exercita-

(*y*) La Nature est juste envers les Hommes: elle les recompense de leurs peines; elle les rend laborieux, parce qu'à de plus grands travaux elle attache de plus grandes recompenses.

L'Esprit des Lois, Tome 2, P. 4.

tionum genera, quæ scilicet gestationes vocantur. Inter gestationes, equitatio, cæteris omnibus longe præstat; actio enim musculorum haud exigua in ea requiritur, sed adeo levis, et ita variata, ut etiam valde infirmis, iisque qui plane ambulare non possent, tolerabilis, et grata, et valde salutaris fiat. Longa itinera, in regiones salubres equitatione peracta, in hoc malo magnopere prosunt. Ægro, vero, neque ad hanc optimam gestationem valenti, mitiora præscribenda sunt gestationis genera, et maxime gestatio in rheda, et navigatio, quæ revera sæpe quam optime profuerunt.

Frictio. De hujus utilitate, in Physconia Splenica tractanda, minime ambigitur. Viribus musculorum opitulari videtur, et certe sanguinis cursum juvat, et actionem vasorum resorbentium multum promovet. Frictionem in tumorem ipsum dirigere, et eam validissime adhibere, semper oportet. Usus Unguenti e mercurio, ad partem inter frictionem defendendam, et simul ad corpus universum hoc remedio imbuendum, minime a consilio medendi alienus foret.

Cæli Mutatio. Ex observationibus innumeris satis patet dispositionem ad multos morbos ex statu cæli et aëris provenire. Ratio ergo suadet, multos morbos, ex cæli intemperie ortos, cæli mutatione præcaveri et sanari debere. Nec aliter res se habet. Plurimi enim morbi, nullis aliis reme-

diis domandi, tempestate vel cælo mutato sponte evanescunt, aut levantur. Et omnes medici, tam veteres quam recentiores, in hoc consentiunt, cæli mutationem multum esse auxilii in variis morbis, vix aliter medendis.

III. Ad tertium nostrum medendi consilium respondendum, multa quæ sub secundo consilio comprehensa sunt, in usum revocanda. Idoneus cibus, vina generosa, exercitatio assidua, cortex peruv. cæteraque amara, ferrum, balneum frigidum, et cæli mutatio, atque omnia denique quæ corporis tonum augent, neque ventriculo sunt aliena.

IV. Ad quartum, ultimumque consilium, jam ventum est, morbum recidivum nempe arcere.

Hoc optime præstabit eorumdem remediorum continuatio, quæ sub tertio consilio recensimus; et præcipue, cibus idoneus, vina generosa, exercitatio crebra, balneum frigidum, atque in regionem patria salubriorem, migratio.

Nihil amplius mihi restat, Dissertatiunculæ huic jam finem impositurο, quam ut almæ huic Academiæ, unde tot et tanta beneficia accepi, optima

voveam. Diu floreat, scientiæ decus, patriæque, rebus in adversis, præsidium.

Denique, liceat mihi, Professoribus hujusce Academiæ illustribus, meritas agere gratias. Ob insignem, in arte propria, peritiam, et in omni literarum genere scientiam ; ob benevolentiam et urbanitatem, in Medicinæ studiosos demonstratam, quantas sibi laudes collegerint, nemo est, qui non audivit. Quantam delectationem a prælectionibus eorum eruditis quantumque fructum, ipse perceperim, semper meminisse juvabit. Scientiam Medicam ornare atque excolere diu pergant ; sint florentes, sint honoratissimi, sint beati.

CURSORY OBSERVATIONS

ON THAT

FORM OF PESTILENCE

CALLED

YELLOW FEVER.

TO

SAMUEL L. MITCHILL, M. D. F. R. S. E.

PROFESSOR OF NATURAL HISTORY IN THE UNIVERSITY OF NEW-YORK, &c.

My dear Sir,

I HOPE you will pardon the liberty I take in prefixing Your name to the following Memoir. To whom can it be so properly inscribed as to the affectionate and uniform Friend, the literary Associate and Fellow-labourer, and the Colleague in academical office, of its lamented Author ?

Seldom has a literary connection been more uninterrupted and happy, than that which subsisted between You and my Brother, for near sixteen years. Knowing, as I do, the history and character of that connection, You will not wonder that I feel, in approaching You, as if I were addressing a surviving Relative ; and as if you had a higher interest, than that of mere compliment, in all the productions of his mind.

With fervent wishes for the long continuance of your honours and usefulness, and for the promotion of your best welfare, I am, dear Sir,

Most respectfully and affectionately,
Your friend,

THE EDITOR.

New-York, August 9th, 1813.

CURSORY OBSERVATIONS, &c.

THE design of the following paper, as it is simple and definite, may be comprised in a few words. It is intended to combine a number of facts relating to the operation of *Poisons* on the animal system; to compare them with the action of febrile miasmata; and to draw such conclusions concerning the nature, prevention, and treatment of pestilential diseases, as may appear legitimately to result from the comparison.

The mode of illustrating the nature of fever, by considering its remote cause as a *poison*, leads to an interesting train of inquiry, and furnishes a great number of instructive and luminous analogies. It is not, indeed, pretended, that this view

of the subject is, in any respect, new. Many of the most enlightened physicians have long since perceived this coincidence of facts, and have accordingly prosecuted the comparison to a considerable extent. It only remains, therefore, at present, to inquire whether this analogy may not properly be carried still further, and whether it will not suffice to unfold a number of intricate and important circumstances of that form of pestilence which has lately produced so much distress and mortality in the United States.

If this comparative view of miasmata and poisons terminated merely in speculation, however curious or unexpected many of the coincidences might appear, the publication of it would scarcely accord with the existing importance of the subject; but, believing that many practical inferences, respecting pestilential epidemics, may be deduced from such a comparison of facts, I have thought proper to lay it before the public, in order to be corrected or approved by my medical readers.

To prevent misapprehension, it will be proper to state, that, at present, no discussion will be undertaken concerning the *origin*, domestic or foreign, of pestilential epidemics; the quality of *contagion* attributed to them; nor the precise chemical *constitution* of the morbid cause.

These topics, though certainly of the highest concern to our country and to mankind, have been so ably treated by several writers, that it is the less necessary now to renew the consideration of them.

Before proceeding to an account of the operation of poisons, it will be proper to state some of the causes which prevent the general acknowledgment of the analogy between them and the infectious matter of pestilence.

The first which deserves to be mentioned is the gaseous and invisible state of pestilential miasmata. When poisons are spoken of, they are generally understood to mean certain visible and palpable substances, of mineral or vegetable origin, or injected into the system by some venomous animal. The conveyance of any of those substances into the stomach, or the bite of the venomous animal, is considered as the signal of approaching mischief. And this relation between cause and effect is usually so obvious and uniform as to be recognized even by the most careless and ignorant part of mankind. All this, however, fails in the aërial form of the noxious power producing malignant diseases, which, in a great measure, escapes the observation of the senses, and is chiefly to be known by its effects.

Another cause of overlooking the analogy contended for, is the more frequent suddenness of death from poisons, produced by the largeness of the dose, which stimulates beyond the point of fever, and quickly overpowers and extinguishes the operations of the vital principle. By diminishing the quantity to an appropriate amount, these noxious substances may be made to exhibit the course, duration, and nearly all the phenomena of what is called a malignant fever.

But, above all, the attention of physicians has been diverted from this analogy between miasmata and poisons, by the febrile part of the character which generally belongs to pestilential diseases, and which, in common apprehension, is constantly connected with them. Yet these diseases are by no means universally accompanied with what is strictly called fever. There is often a degree of virulence in the Asiatic plague, in the yellow fever, and in all the other forms of pestilential and malignant diseases, which altogether transcends the process of fever, and extinguishes life in a more summary manner. In the worst cases, both of poison and pestilence, the febrile part of the symptoms excites little attention. After all our researches into the nature of fever, it seems primarily to consist in the stimulation by poison, miasmata, or otherwise, of a particular part of the system, and in the propagation of morbid affection

afterwards, from the viscus or part originally invaded, to the heart and arteries, and other parts of the body. If this be just, according to the theory of a celebrated writer,* fever is merely topical at first, and subsequently a disease of association. The morbid cause, how varied soever, whether contagion or miasma, whether alternation of temperature, or other noxious power operating in a similar way, appears always to act upon the same principle: it stimulates, directly or indirectly, a particular portion of the system, in a less or greater degree; sometimes to the extent of common inflammation, sometimes to inflammation *sui generis*, then to more violent inflammation verging rapidly to gangrene, and, lastly, to the extent of paralysis. The part thus variously affected, through the medium of sympathetic association, propagates disease to other parts of the system, and especially to the heart and arteries. This association may be more or less comprehensive, and thereby render the fever more simple or compound. And upon certain peculiarities of structure, or the greater or less importance of the part primarily attacked, and upon the more or less compound nature of the disease, resulting from the extent of association, will probably depend the character of the fever, as to mildness or malignancy.

* Dr. Darwin.

Examples of this may be found in cases of pneumonia and yellow fever. In the former, a local inflammation of the lungs, the effect of exposure to alternation of temperature, excites febrile action throughout the sanguiferous system: in the latter, miasmata, received, as there is commonly reason to conclude, into the stomach, first attack that important organ, and, soon afterwards, draw into morbid sympathy various parts of the head, limbs, back, &c. then the heart and arteries, and, successively, many other parts of the body. Hence it appears that fever is originally local; and though, in its progress, it be extended over the whole body, we are still to regard it chiefly as symptomatic of the stimulus applied to a particular part. If a sword penetrate the abdomen, and transfix the stomach, the range of sympathy possessed by this viscus will draw on a train of severe consequences, such as pain, inflammation, fever, convulsions, gangrene, &c. In this case the convulsions and the fever are equally symptomatic of the wound; and, by attending principally to these, and overlooking the organic injury, we should act as is common in pestilential diseases, where the force and rapidity of the action of the blood-vessels are deemed of more importance than the local poison which inflames, corrodes, or paralyses a vital organ.

After this digression, which, however, the rea-

der will observe to be essentially connected with the subject before us, it is proper to return to the operation of poisons. There can be little danger of a mistake of terms in the treatment of this subject; but, to prevent this, it may be observed, that the word poison is simply used to designate a substance which injures or destroys life by a small quantity, generally in a short time, and by a mode of action not obvious to the senses. These substances, according to their origin, are divided into mineral, vegetable, and animal; and, though much diversity will be observed in comparing them, yet there seem to be some general principles in which they all remarkably agree. To the divisions of poisons just mentioned, a fourth, viz. the aërial, has been added; and if the opinion maintained in this paper has any foundation, the propriety of such addition will be sufficiently apparent. Indeed, according to this opinion, miasmata are truly poisons; but, for the sake of discrimination, the usual terms of distinction will still be preserved.

Of the mineral poisons it will be only necessary to mention a few, and such as most frequently fall under notice. The oxyd of arsenic (common white arsenic,) the muriate of mercury (corrosive sublimate,) and the acetite of copper (verdigrise,) are familiar to every body. The effects of these substances, when taken into the stomach, are nau-

sea, vomiting, burning heat and pain referred to the stomach, sense of distention, violent griping and burning pains of the intestines, which are sometimes costive, sometimes affected with purging; the discharge of a slimy and frothy matter, often mixed with blood, by vomit and stool; insupportable thirst; pains and cramps in the limbs; pains in the back; flushing of the face; the pulse at first full, strong, and frequent: in the progress of the disease, hiccup and convulsions take place; hæmorrhages appear from various sources; the violent retchings become aggravated, attended, towards the close, with vomiting of dark-coloured or black matter;* red or dark spots appear on the skin; sudden prostration of strength, weak

* A man took, by mistake, a drachm of white arsenic instead of cream of tartar. The usual symptoms came on—thirst, heat at the stomach, vomiting, hiccup, weak, slow and intermittent pulse; the matter puked up bilious and dark-coloured: on the fourth day he was attacked with hæmorrhagy; on the seventh he was affected with violent priapism; on the eighth he was seized with more distressing anxiety—his pulse was febrile, full, and intermittent—convulsions came on—delirium and death. On dissection, the stomach was found deprived of the villous coat, and full of a black liquor, which deposited a sediment like powdered charcoal. See *Nosologie Methodique de Sauvages*, tome iii. p. 112.

Similar cases, especially as to black vomiting and the other more important symptoms, may be found in Wepfer (Historia Cicutæ Aquaticæ,) in Morgagni (De Sed. et Causis Morb.,) and in many other writers.

A fatal case of poison by arsenic also occurred, some time

pulse, tremblings, cold sweats and cold extremities, commonly usher in death. A rapid putrefaction begins very soon after death, and renders speedy interment indispensable. Dissection discovers marks of violent inflammation and erosion of the stomach, and the collection of a large quantity of the matter of black vomiting. In cases where persons have survived the taking of poisonous doses of arsenic, the hair has been observed to fall off, and a jaundice of the worst and most obstinate kind has taken place.

The vegetable poisons are so numerous, and most of them so well known, that it is unnecessary, at present, to recount them. They produce, when taken in a given quantity into the stomach, high febrile action, heat and redness of the skin, especially of the face, neck and breast, redness and despondency of the eyes, furred and dry tongue, anxiety and restlessness, sense of heat and sickness at stomach, vomiting, oppression and pain about the præcordia, pain in the head, giddiness and staggering, delirium, hiccup, convulsions, subsultus tendinum, dilatation of the pupils of the eyes, stupor, sometimes yellowness of the skin, hæmorrhages, black vomiting, black

ago, in the New-York Hospital. Few of the circumstances can now be recollected; but black vomiting came on—and the patient died about the sixth day.

and pitch-like stools, &c. and after death, sometimes before, livid spots are observed on the body, the appearance of the blood is dark and dissolved, and putrefaction speedily takes place.*

The animal poisons are generally communicated by means of the bite or sting of the venomous animal. They induce a variety of phenomena, which it is not necessary minutely to state. The bite of the poisonous serpents is generally followed by tumour, and livid colour of the part bitten, extravasation of dark-coloured blood into the adjacent cellular membrane, nausea and vomiting, sudden prostration of strength, paralysis of the limbs, convulsions, yellowness of the skin, hæmorrhages, &c. Livid appearances of the body, a dark-coloured and dissolved state of the blood, and a rapid putrefaction, are observed, after death.†

The most transient consideration of the symptoms just recited cannot fail to impress the reader with the striking analogy between the operation of poisons and the miasmata and contagions which produce epidemic and pestilential diseases. Scarcely a single symptom belonging to malignant distempers can be mentioned, which does not also appear as a consequence of the reception

* See Wepfer (Historia Cicutæ Aquaticæ.)

† Fontana (Treatise of the Venom of the Viper.)

of poison ; and, particularly, the most deadly symptoms observed in the one form of disease, are also found to be common to the other.

It may be objected that the deleterious effects of poisons are not so regularly attended with febrile appearances as our pestilential epidemics. But, in answer to this, it should be observed, that the irregularity of malignant and pestilential diseases, with respect to the circumstances of fever, has been always remarked by the best practitioners ; that the absence of the cold stage at the beginning, and of the hot stage of fever afterwards, is remarked among the signs of malignancy ; and that some of the worst cases, instead of frequency of pulse and increased heat, exhibit a wonderful reduction of both. The conclusion, therefore, is, that only the lighter cases of pestilence are unlike the effects of poison ; and that in proportion to the degree of malignity the resemblance grows stronger. It must be admitted, indeed, that the gross matter of mineral poisons often acts upon the alimentary canal, especially in its first operation, after a manner which cannot be predicated of the subtle form of miasmata ; but progressively the difference is much reduced ; and, towards the close of these diseases, is nearly lost.

The morbid condition of the stomach, induced by all the mineral and vegetable poisons received into that organ, and in like manner by the miasmata

of pestilence, seems to be the original source of the analogy now attempted to be established. All these noxious powers, however various in constitution and origin, concur in possessing a stimulant operation so violent as to cause inflammation, paralysis, or decomposition in this vital part. The effect of such a stimulus on the alimentary canal itself, will readily explain all the symptoms of irregular action which take place in that organ; and the sympathetic associations of the stomach with other parts will explain the affections of the head, limbs, &c. as well as the rapid exhaustion of the principle of life so often observed.

There is one remarkable phenomenon in the history of yellow fever, which seems to have no parallel but in the operation of poisons received into the stomach. I mean the retrocession of the high febrile and inflammatory symptoms of the disease, which often takes place about the third or fourth day, and leads the inexperienced observer, and the deluded patient, to confide in the hopes of recovery. If any symptom can be said to distinguish the yellow fever from other forms of pestilence, this deserves, perhaps, the most to be selected; and the cases related below, would lead to a belief, that certain mineral and vegetable poisons operate in a very similar manner.*

* A physician of this city, some time ago, was requested

The evidence of dissections strongly confirms the similarity of the operation of poisons and miasmata. By these it appears, that in yellow fever the stomach and duodenum generally sustain the first

to visit a child, who, by mistake, had swallowed a strong solution of the muriate of mercury. Some barley-water, which happened to be at hand, was immediately given in large quantity, and the contents of the stomach were ejected by vomiting within four minutes after swallowing the poison. The following night the child passed a good deal of blood by vomiting and stool, succeeded by violent griping pains. On the second day these symptoms had entirely gone off; but some fever and cough (a complaint which the child laboured under before taking the poison) had returned, for which a demulcent remedy, with laudanum, was ordered. On the third day the fever and cough were so severe that it was thought proper to apply a blister to the sternum. After this all complaints vanished, and the child appeared to be fast recovering. When this favourable state had continued some time, the patient began to vomit a dark-coloured matter—the pulse became more frequent, irregular and weak—the intellectual functions were impaired—convulsions soon succeeded—a frantic delirium came on—and death took place on the fifth day.

A young woman dined upon a dish containing a poisonous species of *mushroom*, (*Agaricus Clypeatus*, Lin.) In the afternoon she was attacked with cardialgia—in the evening she felt acute pains—nausea and vomiting came on, attended with bilious stools and great prostration of strength. On the second day her pulse was frequent and small, and the epigastrium was swelled. Demulcent remedies, fomentations and clysters were ordered—many stools were procured, and several pieces of the mushroom discharged. On the third

and most violent impression of the miasmata; that they suffer by means of this stimulus, inflammation, paralysis, or corrosion; and that they exhibit a destruction of the villous coat, and an ac-

day the cardialgia and debility continued. On the fourth day the patient was easy through the night—the skin was moist, and the pulse better; and, after taking some further remedies, she voided more of the mushroom: the symptoms then abated, and she slept. On the fifth day she was seized with delirium, oppression of the breast, sighing, anxiety, &c. her pulse failed—she refused all remedies—her extremities became cold—the difficulty of breathing increased—she was seized with locked jaw—and yellowness appeared on some parts of the skin. On the sixth day the patient died. On dissection, the stomach was found to be affected with inflammation, the duodenum distended with flatus, and the bile of the gall-bladder green and black.

See *Nosologie Methodique de Sauvages*, tome iii. p. 115.

The following case, related by Dr. Percival, proceeded so insidiously as to deserve to be mentioned here; though, for the sake of rendering it brief, much of the detail is abridged.—A young lady ate a large quantity of pickled samphire—this produced pain in the stomach and eruption on the skin—she was affected with shooting pains over the body, was dejected, restless, and very thirsty—her pulse was frequent and small, the tongue covered with a white fur, and she passed several days without a stool. On the sixth day, vomiting came on, preceded by hiccup. On the 7th, the retchings became incessant, and the discharges of a green colour and very offensive—progressively the discharges, both by stool and vomiting, were more and more offensive, and the latter assumed a dusky green colour. Upon using some remedies, the symptoms were suspended; but in 24 hours the vomiting re-

cumulation of black matter, exactly resembling those which arise from the mineral poisons,*

turned, the extremities became cold, and she expired on the tenth day.—On dissection, about a quart of brown and fœtid liquor was found in the stomach; the internal coat of that organ was inflamed and gangrenous, particularly about the *cardia* and *pylorus;* and this appearance extended itself some way down the *duodenum.*—By the usual chemical tests, the pickled samphire was found very strongly impregnated with copper. See *Essays Medical, Philosophical and Experimental,* vol. ii. p. 122.

* The stomach and the beginning of the duodenum are the parts that appear most diseased. In two persons, who died of the disease on the fifth day, the villous membrane of the stomach, especially about its smaller end, was found highly inflamed; and this inflammation extended through the pylorus into the duodenum some way. The inflammation here was exactly similar to that induced in the stomach by acrid poisons, as by arsenic, which we have once had an opportunity of seeing in a person destroyed by it. See *Dissections by Doctors Physic and Cathrall, in Dr. Rush's Account of the Yellow Fever of* 1793, p. 120.

The internal part of the stomach and duodenum is sometimes reddish or yellow, but often blackish; the tunica villosa very easily separating, even with the touch; the other guts much in the same state: but, in general, the two first most affected. In the stomach there is often a thick mucus, with the same black stuff that is thrown up by vomit: if the villous coat is not much affected, the mucus prevails; but if otherwise, the *black vomit.* Farther down the guts, the black stuff is thicker and more viscid, almost resembling tar; and, in the great guts, it is often mixed with clotted blood. See *Hunter's Diseases of the Army,* p. 201.

The morbid appearances observed in other viscera, and especially the effusions of blood and serum, seem more probably to result from the general violence of arterial action; and the livid and black spots which are often discovered on the lungs and elsewhere, correspond with similar spots on the lungs of animals that die of poisons, and which are ascribed to the universally morbid state of the blood. The burning heat in the stomach, as well as the nausea and vomiting, at the attack of yellow fever; the strong traces of inflammation in that organ when laid open to view; the injuries of the villous membrane; the black matter overspreading its surface; and the extension of these morbid appearances to some distance in the duodenum, all seem to denote the presence and immediate application of *virus* to the coat of the stomach. Other circumstances also corroborate this opinion. The obstinate costiveness which appears at the beginning of the disease; the deficiency of bile in the violent cases; and, finally, the scantiness and viscidity of that liquor, discovered in dissecting the gall-bladder, must, I conceive, be attributed to excessive stimulation, and, of consequence, to a morbid degree of absorption in the alimentary canal. It may be objected to the opinion of the operation of miasmata in producing inflammation, paralysis, or corrosion in the primæ viæ, that symptoms characterizing these affections do not always appear in yellow fever, and that sometimes they

do not appear at all, in cases where the greatest organic destruction of the stomach had taken place. But it may be replied that nothing is more probable than fallacy on this subject. Inflammation, in the most fatal degree, may exist in the stomach without fever, pain or vomiting ;* and paralysis may be produced in that organ, in a moment of time, without being perceived.† A cancerous affection of the stomach has been found, by dissection, to exist, which had never been indicated by nausea or retchings.‡ And Morgagni (Seats and Causes of Diseases, vol. iii. p. 374) relates a case of a dose of arsenic proving fatal, where no inflammation, erosion, or other mark of mischief, appeared in the stomach : yet the poisonous material was actually found in contact with the coat of the stomach ; was verified by the usual chemical and other tests, and one of its effects displayed in the appearance of lived maculæ on the skin.

Dr. De Witt, in a very judicious account of the poisonous effects of the datura stramonium (see Med. Rep. vol. ii. p. 27, 3rd edition,) has noticed the resemblance of these effects to the symptoms of malignant fevers.

* Cullen's First Lines, vol. i. p. 205.

† Zoonomia, vol. iii. (American edition) p. 269.

‡ Duncan's Medical Commentaries, vol. iii. (2d Decade) p. 146.

The production of yellowness of the skin, by certain poisonous vegetables, and by the bite of spiders, serpents, &c. (see Nosologie Methodique de Sauvages, tome iii. p. 448,) as well as in malignant fevers, is a striking proof of the same analogy.

The relation which the disease produced by the bite of a rabid animal bears to malignant fevers, is ably illustrated by Dr. Rush, in his observations on the nature and cure of hydrophobia. See Medical Inquiries and Observations, vol. v.

The condition of the blood, as inspected after the operation of poisons and miasmata, affords strong evidence of the similarity of their effects. The most distinguished compilers of facts on the subject of poisons, such as Wepfer, Mead, Fontana, &c. generally represent the blood, after the system has been acted upon by mineral, vegetable, and animal poisons, as morbidly thin, dark-coloured, and indisposed to the usual manner of coagulation. That a similar state of the blood is generally found in the malignant cases of yellow fever will not be denied. The livid maculæ and universal duskiness of the skin, the hæmorrhages from various sources, and the rapid putrefaction of dead bodies, are all common effects of miasmata and poisons; and that the last, especially, is a common consequence of the operation of a violent stimulus, is proved by its occurrence after death

by lightning, the fatigue of the chace, &c. The subject, however, of the morbid changes of the blood has not been sufficiently explored; and may be expected, hereafter, to yield important instruction concerning the action of these noxious powers.

Flushing of the face, neck and breast, redness of the eyes, and heat in the eye-balls, are remarkable symptoms at the beginning of yellow fever. They are the usual effects of vegetable and other poisons taken into the stomach. They are observed, in a considerable degree, after taking many stimulant substances, not poisonous, into the stomach; and redness of the eyes, especially, is a well known consequence of the intoxication of opium and ardent liquors. It seems to be the effect and sign of a want of absorption in the capillary veins, induced by an exhaustion of vital power, from the operation of some excessive stimulant.

It was before stated, that a falling off of the hair has been a frequent consequence of the poison of arsenic. The occurrence of the same thing after malignant fevers deserves to be recollected in this comparison of these diseases.

Among other consequences of an excessive dose of arsenic mentioned before, is a liableness to frequent attacks of jaundice. A gentleman,

previously remarkable for his athletic powers, was nearly deprived of life by this poison, and afterwards exhibited all the appearances of a broken constitution. Soon after this misfortune, he was seized with a disease of the liver, followed by paralysis; and thenceforward was subject to jaundice four or five times every year.

The analogy between the miasmata of pestilence, and mineral as well as vegetable poisons, will likewise appear interesting, if we consider the passages by which they gain admittance into the body. Three passages have been assigned for the reception of miasmata; that by the lungs in respiration—another by the cutaneous absorbents—and a third by the œsophagus and stomach. The reception by the lungs would appear probable at first view, and, from the actual approach of yellow fever under the form of catarrh in many instances, no doubt can be entertained of the fact. But though miasmata may find entrance by the lungs, and many cases of pestilence be disguised by the mask of catarrh; yet we can by no means pronounce this the usual inlet of the cause of yellow fever. The cases of primary and continued affection of the lungs, in this disease, are comparatively rare. The continuance of any single portion of air in the vesicles of the bronchia must be necessarily short; and the quick return of it, aided by the exhalation of moisture which always accom-

panies the act of expiration, must greatly dilute and expel any matter of infection which had obtained admittance. The noxious gas probably adheres to the vapour of water wherever they meet, and thus the *halitus* of the lungs proves to be one of the best means of defence against this aërial poison.

That miasmata are absorbed by the skin, is rendered probable by a multitude of facts. The course of inflamed lymphatics has served to trace the conveyance of a fever-producing poison from a gangrene in the lower extremities. In a similar manner an old ulcer of the leg has been often known to furnish matter of infection, which passing upwards, excited a swelling in the groin, and a consequent fever.* It is probable that the pestilence of the Levant is often communicated by cutaneous absorption, which affords the best solution of the glandular swellings in that disease, and leads to the supposition, that such swellings indicate the route of miasmata into the system, rather than any critical effort of nature to discharge them. Hence may be explained the efficacy of oil applied to the skin in this kind of pestilence. The oil not only destroys such miasmata as still adhere to the skin, but, pursuing and overtaking such as have found admittance into the lympha-

* See Hunter's Diseases of the Army, p. 186.

tics, it guards the system from the mischief which otherwise might ensue. There is ground to believe, that miasmata are heavy and sluggish, that they commonly lurk near the earth, and that they are most virulent near to their source. Hence we may account for Dr. Russel's fact of inguinal swelling occurring so much oftener in the plague than the axillary, parotid, cervical, and maxillary:† hence, likewise, we may account for another fact mentioned by him, viz. that the inguinal bubo of the plague appears lower down the thigh than that of the venereal disease, and nearer to the crural vessels; and hence, finally, we may explain the appearance of pestilence in dogs, mules, and other animals holding their heads near the earth, sooner than in man. But as these glandular swellings rarely occur in yellow fever, it must be concluded, that the cause of that disease generally finds admittance into the system through some other route.

The comparative infrequency of pulmonary symptoms, as well as of buboes and carbuncles in yellow fever, compels us to seek for the route of the morbid cause in the œsophagus and stomach. If the evidence in favour of this opinion be duly considered, it will be difficult to avoid the conclusion. The first morbid sensations, at the

† Treatise of the Plague, p. 113.

approach of yellow fever, may be generally referred to the stomach, and to those parts with which the stomach maintains the strongest association of motions. In the progress of the disease, this organ continues to suffer far more than is usual in other malignant distempers: and, towards the close of the tragedy, black vomiting, the result of decomposition as well as of morbid secretion, and yellowness of the skin, the effects of virulence exerted on one of the nearest appendages of the stomach, furnish the two symptoms which, more than any others, have conferred on the disease its popular denominations. The miasmata of this form of pestilence, mixed with the saliva, over which the air in respiration wafts them, descend into the stomach; arrived there, they cannot be readily expelled, as from the lungs, by the alternate expulsion of air, and the envelopement of the halitus, which is incessantly discharged; but adhering to the coat of the stomach, and acting like a large dose of opium, or other violent stimulants, they speedily render the intestines costive, thereby preclude their passage down, and then proceed to execute the remainder of their pernicious work.

Upon the whole, it results, that yellow fever is not only the offspring of a deleterious poison, but that this poison is ordinarily received into the stomach; that the great vitality and extensive associations of this viscus sympathetically induce dis-

order in many other vital parts of the system; that the delicacy of texture and the irritability of the stomach, combined with the activity of the poison, lead to the inflammation, or other more summary processes, by which its organization is so rapidly broken down; and that, therefore, the yellow fever, being thus primarily and essentially a disease of the alimentary canal, and chiefly of the stomach, may, perhaps, be distinguished from the Asiatic plague, besides the differences of climate, &c. by the various modes in which the miasmata are received into the body; those of the former being less admissible by the skin and more readily miscible with saliva, and those of the latter being just the reverse. The few exceptions which take place in the rare occurrence of black vomiting in the plague of Asia, and of buboes and carbuncles in the yellow fever, serve rather to confirm than to weaken the force of the general observation.

If the opinions concerning yellow fever, which are here maintained, be well founded, it follows, that the principal indications of prevention and cure will be, 1. To arrest the entrance of miasmata into any part of the system, but particularly into the stomach. 2. As much as possible to dilute, envelope, and carry speedily through the alimentary canal, all such miasmata as may unavoidably have gained admittance into it. 3. At the first approach of morbid sensations, to evacu-

ate, as speedily and completely as possible, the contents of the stomach and intestines. And, 4. To allay the violence of stimulation, and, as far as possible, to guard against the consequences of it. The limits of this paper will not allow a discussion of all the means suited to fulfil these indications : a few remedies only will be mentioned, and these in a desultory manner.

I. As it is impossible to prevent the admission of miasmata into the lungs, while we breathe air impregnated with them, and as, when received in that manner alone, they are probably less pernicious, our principal attention should be directed to the means of excluding them from the stomach. Dr. Rand, of Boston, in his excellent paper on this disease, published in the Medical Repository,* asserts that the air, in certain parts of the town, " was so fully impregnated with contagion, as to be very perceptible to the smell and taste ;" and he adds, " exciting the same sensation in my mouth, as a weak solution of corrosive sublimate of mercury, and very similar to the smell and taste of the effluvia from the confluent small-pox, just after maturation ; and it constantly excited in me a salivation, during my attendance upon the sick in those places. I ascribed, in some measure, my security from the disease to this effect upon the salivary glands." During the pestilence of

* Vol. I. 442.

last summer and autumn, in this city, I remarked in myself, whenever placed in infectious situations, an incessant inclination to discharge saliva by spitting; but ascribed this, probably by mistake, to my caution in avoiding to swallow it while immersed in bad air. A constant attention to this point cannot be too strongly enjoined; and, in order to increase the quantity of saliva, as well as to insure its discharge by spitting, it is always advisable, in infected places, to keep some pungent aromatic substance in the mouth. Rinsing the mouth and throat as often as may be convenient, and especially after returning from suspicious situations, as well as before eating and drinking, will always be proper. Attention to frequent ablution, and to all the circumstances of personal cleanliness, will, probably, afford sufficient guard against the absorption of miasmata from the surface.

II. This indication is of great importance. Water, the universal diluent and solvent, deserves to be relied upon for this purpose to a great extent: it should be taken copiously and frequently: and all those articles of diet in which it is a predominant part should be considered in the same light. An addition of a small quantity of any sound fermented liquor, especially porter or cyder, to the degree of rendering it more palatable and gently stimulant, will occasionally be useful. Taking

animal food in the form of soup, using milk plentifully, and moderately distending the stomach with any of those liquid preparations of farinaceous substances and fruits which are easily digested, will correspond to this indication. I can scarcely express the degree of relief which I often experienced, during the prevalence of the last pestilential epidemic in this city, by the large use of these diluting and nutritious articles: they speedily removed a distressing sense of heat at the stomach, which I could ascribe to nothing but the presence of the poison of pestilence. Two advantages arise from keeping the stomach moderately filled by these liquid substances: every thing acrid is diluted; and the absorbents, fully employed in taking up what is bland and agreeable, will be more likely to reject what is unsuitable.

It is remarkable, that of those persons who are attacked with yellow fever, a great majority are seized in the night, or find themselves ill on awaking in the morning. According to Dr. Fordyce, the reverse of this, and by a very large majority, is true of the cases of ordinary fevers.* Can this circumstance of yellow fever be owing, in any measure to the emptiness of the stomach taking place in the night, and the closer access to its coat thereby afforded to the pestilential vi-

* Dissertation on Simple Fever, p. 33.

rus?—If this conjecture have any foundation, an oily diet must be very important as a preventive of yellow fever, and especially when taken at night, just before going to bed; as, for example, a supper of sallad dressed with oil. A plentiful use of butter must also be advisable on the same principle. If our opinion be true, the same advantage would result from an oily diet in stomachic pestilence, or yellow fever, which has been said to arise from the application of oil to the surface of the body, in the glandular and carbuncular pestilence of Asia.

Mountebanks and jugglers, who undertake to swallow poisons in public, in order to astonish the multitude, and to draw money from vulgar credulity, are always careful to take these poisons on a full stomach.*

In the advanced stages of yellow fever, milk is often resorted to as the only substance which can then be borne by the diseased stomach. But might it not be used habitually, and in large quantity, as a preventive, and also, in the early part of the disease, as a means of obviating future mischief? Wepfer found that milk, given to animals at the same time with some of the strongest vegetable poisons, greatly diminished their force.

* See Wepfer (Hist. Cicut. Aquat.)

But of all the means of obviating the approach of this disease, preserving regularity in the intestinal discharges is, perhaps, the most important. And, indeed, when this is completely done, it seems probable that nothing short of the most concentrated and virulent assault of miasmata will be sufficient to bring on the disease. It cannot be too deeply impressed, that the stimulus of pestilential poison, especially at the beginning of its operation, acts like an excessive dose of opium and many other stimulants, in arresting the intestinal discharge, and thereby precluding its own exit from the system.

III. But if all preventive means prove ineffectual, and symptoms of the disease be perceived to approach, it then becomes greatly interesting to do whatever may be expedient with the least possible delay. As yellow fever is here considered as the stomachic form of pestilence, produced by a poison primarily acting upon that organ, it is proper, in this case, as in other cases of poison received into the stomach, in the first place to attempt the expulsion of it. This can be best accomplished by an emetic, which, given at a proper time of the forming stage, is perfectly safe, and efficacious beyond all other remedies. The discredit attached to this remedy, in yellow fever, is owing to the postponement of it till inflammation, or some higher affection of the stomach, had come

on, which could only be thereby aggravated, and rendered more speedily fatal.

If, therefore, during the prevalence of yellow fever, a person be affected with any disorder of the stomach, head-ach. or pains of the back or limbs, with chilliness or flushing of the face, and especially if such feelings shall have been preceded by an interruption of intestinal evacuation, whiteness of the tongue, &c. he will judge wisely to take an emetic* without a moment's delay, and,

* In the works of Frederick, the late king of Prussia (vol. ii. p. 229.) we find the following attestation of the efficacy of emetics.

"But the ravages of war were unequal to the ravages which epidemical disease made in the hospitals. The disease we speak of was a species of inflammatory fever, accompanied with all the symptoms of the plague. The sick became delirious on the day they were attacked. Carbuncles appeared on the neck, and under the arm-pits. Whether they were or were not bled, it was the same: death carried off all those, without distinction, who were attacked by this malady; the venom of which was so virulent, its progress so rapid, and its effects so prompt, that the patient, in three days, was in the grave. Resort was ineffectually had to every kind of remedy. At length emetics were employed, and succeeded.† Three grains were dissolved in a measure of wa-

† *On eut recours à l'emetique.* By this phrase the royal author probably means some preparation of antimony. [*Note of the English Transcriber.*

[*For a reference to this quotation, I am indebted to Mr.* J. W. Watkins, *of the Seneca Lake.*]

as soon as the operation of that is completed, to procure a speedy and perfect unloading of the intestines. The choice of cathartics deserves attention. Such as operate expeditiously and powerfully will the sooner discharge the miasmata adhering to the intestines, and pent up by costiveness. Extraordinary virtues have been ascribed to castor oil, and probably with reason: its demulcent and enveloping, as well as cathartic power, must be important, by guarding the alimentary canal from the attack of a corrosive poison. Many of the neutral salts deserve great commendation. The tartrite of soda (Rochelle salt,) the phosphate of soda, and the tartrite of potash (soluble tartar,) are well adapted to this purpose; and they must be especially invaluable whenever the infectious matter of pestilence is constituted with such a proportion of the principle of acidity as to become actually acid.‡ Injections may do much to pro-

ter: the sick were made to drink till the dose began to operate; and this was found to be a sovereign specific against the disease: for after it was brought into use scarcely three out of a hundred died. The causes of the disease, no doubt, were perspiration impeded by cold, and indigestion occasioned by bad food. Powerful evacuations only were found effectual."

‡ See Dr. Mitchill's paper on soda, Med. Rep. vol. ii. p. 274, 3d edition.

cure a speedy solution of costiveness, particularly when they consist of so large a bulk of water, with a quantity of mild oil and muriate of soda (common salt,) as will effect the mechanical dilatation of the large intestines. For this purpose they should be administered by a large syringe, with some force, and in a continued stream, till the distention excite uneasiness. In some instances, the quantity has been carried to the extent of two gallons with advantage. In marshy countries it has been frequently observed, that remittent fevers and dysenteries often interchange their forms; one always suspending the other. In the West-Indies it has been proposed to use, by injection, a solution of the muriate of mercury (corrosive sublimate,) in order to impregnate the system with that remedy. Might not a solution of this or some other active stimulant be injected into the rectum, in order to excite an artificial tenesmus and dysentery—a safer disease than yellow fever—for the purpose of diverting, by continuity of membrane, the morbid action from the stomach?

IV. The means of fulfilling this indication have already been so much the subject of discussion, that it will be less necessary now to dwell upon them. It is obvious that, when the disease assumes the tone of active inflammation, blood-letting will stand first on the list of remedies to be employed to diminish its violence. It is admit-

ted, at the same time, that the use of this evacuation, especially in the more malignant and prostrating forms of the disease, will require the greatest caution and discernment. But, to deny altogether the admissibility of blood-letting in a state of such violent inflammation as the yellow fever often exhibits, and where dissection shows, in cases where it had been omitted, such extensive effusions of blood and serum in the lungs, brain, and other important viscera, is, in my judgment, to oppose some of the most established maxims in the practice of medicine. It is true, indeed, where a large dose of miasmata has been received into the system, and remains, for some time, undiluted and undiminished, that every hope of relief from this remedy will ultimately fail.

The efficacy of mercury deservedly places it high in the list of remedies adapted to this indication ; but as the operation of it is very complex, and little understood, it would be improper at present, to undertake the discussion.

Blisters are entitled to great confidence, especially when applied to the epigastric region for the purpose of relieving the local disease of the stomach ; but they are generally resorted to at too late a period. They seem to be better adapted to obviate the incipient affection of the stomach, than to restore its exhausted powers, or to arrest the

decomposition which takes place in the advanced stages.

Cold water, applied to the surface of the body by affusion or immersion, is one of the most powerful means of diminishing excessive action of the sanguiferous system in fevers. Dr. Currie, of Liverpool, has treated this subject with so much ability and precision, that its importance in the scale of remedies is likely to be greatly augmented. He is very sanguine of its efficacy in yellow fever, and accordingly recommends it, in strong terms, to practitioners of medicine in the West-Indies and in America. In the more violent cases he prefers immersion to affusion, as being more competent to produce that great reduction of action which the exigency of the occasion requires; but in this mode of application, it is obvious, the remedy will demand the utmost attention. It is so impossible, in a few words, to do justice to his directions for the management of water, in its external and internal use, that the reader must be referred to the work itself for more complete information. As a means of carrying off heat, and of dissolving the catenation of morbid actions which forms the essence of fever, this remedy can have no superior.

The advanced stages of yellow fever, like those of other malignant diseases, often present a con-

dition of the system not yet sufficiently investigated, and which it is a great desideratum to be able successfully to treat. This condition, besides the usual circumstances of debility and exhaustion, is distinguished by duskiness of the skin, often by livid or black maculæ, by a darker colour and thinner consistence of the blood, by tendency to hæmorrhagy, and by other signs of the scorbutic diathesis. How far the irritability of the system may immediately depend on the quantity of oxygenous matter present in it, or how far the stimulus of pestilential poison may be apt peculiarly to consume and dissipate such matter, I shall not, at present, undertake to inquire. But as this state of the body, in yellow fever, so remarkably resembles the appearances of scurvy, and as a large supply of oxygen is found to be so efficacious in the latter disease, it is surely proceeding on fair analogy to extend the remedies of scurvy to the state of the disease now in question. The efficacy of the native acids of vegetables, and particularly the citric, has been long established in the treatment of scurvy. Besides the usual modes of administering these acids by conveying them into the stomach, perhaps some preparations of them might usefully be introduced by way of injection. And if to this be added the respiration of air, charged with an additional quantity of oxygenous gas, the force of this remedy will probably be carried to the utmost degree.

REPORT

ON

THE MALIGNANT DISEASE,

WHICH PREVAILED IN THE CITY OF NEW-YORK,

IN THE AUTUMN OF 1805:

ADDRESSED TO THE GOVERNOR

OF THE

STATE OF NEW-YORK.

TO

JAMES RUSH, M. D.

PHILADELPHIA.

Dear Sir,

I ADDRESS You as the representative of your illustrious Father. The close and endearing friendship which subsisted between Him and the Author of the following Report, will appear from the biographical Sketch prefixed to the present volume. Nor can I ever forget the paternal attentions with which, for a number of years, He was pleased to honour me. Allow me to offer to You, and, through you, to His revered Memory, the best expression of respect and gratitude in my power, by presenting you with a memoir on a subject peculiarly interesting to American Physicians, and, perhaps, the most valuable production of its Author's pen.

Accept, Sir, my best wishes for your welfare and happiness. You bear an honoured name. May it receive from your career new lustre!

I am, dear Sir, most respectfully,
Your friend and obedient servant,

THE EDITOR.

New-York, August 10*th*, 1813.

THE following Report was received by the Public, on its first appearance, with peculiar testimonies of respect and approbation. Soon after its publication, it was reprinted in Great Britain; translated into the French and German languages; and inserted, at large, by M. DUMERIL, in his *Report* on the *Spanish Epidemic of* 1804, addressed to *the Emperor.*

☞ *DISTANT readers will be better enabled to understand this Report by adverting to the following particulars. The city of New-York lies in N. lat.* 40 42 8; *W. long.* 74 9 45; *at the confluence of the river Hudson and Long-Island sound, or the East river; and on the southern and narrow extremity of Manhattan-Island, which is about* 15 *miles in length, and from one to two in breadth. The site of the city, as it originally stood, was very irregular, being broken into hills and declivities, and indented with small rivulets or creeks, skirted with marsh. Many of the hills are levelled; but the marshy grounds, though covered with houses and pavement, are still low and moist. The city is about* 27 *miles from the ocean, and is washed on both sides with water of great depth, whose current is very rapid, whose tide ebbs and flows about* 6 *feet, and which is nearly as salt as that of the neighbouring sea. On both sides of the city considerable encroachments have been made on the water by artificial ground, the whole extent of which may be computed at not less than* 132 *acres. Of this,* 90 *acres lie along the East river, and* 42 *along the Hudson. The portion of it on the East river forms that part of the city where malignant fevers have always first become epidemic and chiefly prevailed. The wharves and docks are constructed of logs and loose stones. All the fresh water used by the inhabitants is procured from wells within the city, and is now become extremely impure. The population of New-York may be estimated* (A. D. 1805) *at about* 80,000.

REPORT, &c.

New-York, Jan. 12th, 1806.

SIR,

THE Malignant Disease which prevailed in this city, for a considerable part of last autumn, having ceased about the beginning of November, it becomes my duty to lay before your Excellency such an account of it as my official situation has enabled me to collect.

I undertake this task with the more readiness, and shall examine the subject with the more attention, as this disease has lately acquired great additional importance from the frequency of its recurrence, the extent of its ravages, and the new and alarming points of view in which it is now considered by the nations of Europe. The embarrassments of our commerce on this account, in foreign ports, have been increasing for several years; they are already become oppressively great;

they are likely hereafter to become still greater; and nothing but a thorough investigation of the subject, and the adoption of a wise and mature system of measures, will be sufficient to ascertain and set in operation any adequate means of relief.

In former seasons, it has been usual to observe sporadic cases of this disease for several weeks before the commencement of the epidemic. This was remarkably verified in the late season; and such cases deserve the more attention as they furnish the best means of calculating the probability of approaching pestilence. Accordingly, one case of a decidedly malignant character was observed in the month of June; several took place in July; a still greater number in August; and at the beginning of September, they had become so numerous as to ascertain the existence of the epidemic. Throughout September and October, the disease continued to prevail with more or less severity, according to the fluctuating states of the weather; but towards the close of the latter month, the coldness of the season had evidently checked its progress; and at the beginning of November, the city was nearly restored to its usual health.

During the early period of the epidemic, nearly all the cases took place on the eastern side of the city, in Front, Water, and Pearl-streets, and principally below Burling-slip. They afterwards be-

came more generally diffused. About the 20th of September, they began to prevail near the North River.* On the whole, the low grounds on the margin of the two rivers certainly produced a chief part of the cases. The number of deaths of the disease in the city, amounted to about 200; those at Bellevue Hospital to 52; and those at the Marine Hospital, sent from the city, to 28. The number of cases of malignant fever reported to the Board of Health amounted to about 600. It is proper, likewise, in estimating the extent of the epidemic, to notice an unascertained number, probably about 40, who after their flight from the city, died in various parts of the country.

The source of this disease forms a most interesting subject of inquiry; on the success of which must depend all rational and adequate means of preventing and eradicating the evil. After a long and careful investigation of the subject, I cannot hesitate to conclude, that *a pernicious exhalation*

* A similar extension of the disease, in the epidemic of 1803, was ascribed by many to the removal of shipping from the East to the North river. As no such removal to that part of the city took place in the late season, it is necessary to explain the fact in some other way. This becomes very easy, when it is recollected that the *made ground* on the North river is much less extensive, and the materials composing it much less foul and corrupt, than that on the East river. The miasmata come to maturity on the one side two or three weeks sooner than on the other.

or vapour floating in the atmosphere, is the primary and essential cause of this disease. In order to produce this vapour, it is necessary that there should be a concurrence of heat, moisture, and a quantity of decaying animal and vegetable matter. It is therefore exhaled by heat from low and moist grounds, overspread with the corrupting offals of animal and vegetable substances, from such substances collected in large masses, or from any place where the process of putrefaction is going on to considerable extent. This exhalation likewise abounds more in some situations than in others. It is more frequently and copiously produced, and more highly concentrated, in warm and tropical countries than in high latitudes and frozen regions. It prevails and exerts its pernicious influence peculiarly in certain climates, seasons, and local situations. It is generated more in summer, and operates more powerfully in autumn than in the other seasons of the year; and it is uniformly more frequent and virulent in sea-port towns, in situations along sea-coasts, in plains, and near rivers, lakes, marshes and swamps, or wherever stagnant waters are found, than in the interior, high and mountainous districts of the country. It is undoubtedly one of the most universal causes of disease in nature. However diversified in quantity or virulence by local circumstances, or by varieties of climate, season, or the condition of society, its effects in one degree or another are

nearly co-extensive with the habitable parts of the globe.

While the noxious exhalation just described, when existing in a high degree of virulence, is considered as forming the primary and essential cause of our disease ; it is proper, in order to be well understood, to notice the operation of certain *secondary* or *exciting causes.* These are exposure to heat, fatigue, cold, intemperance, fear, anxiety, &c. some of which are, in general, immediately instrumental in bringing on the disease in persons predisposed to it by the agency of the atmospheric poison. The noxiousness of this poison, by avoiding exciting causes, may often be long borne without falling into illness ; and hence the operation of exciting causes in suddenly producing the disease is often so striking as to lead many entirely to overlook the effect of the principal agent.

The sources of pernicious exhalation in this city are unhappily very numerous and difficult to correct. Some of them are evils of such magnitude and extent, that it requires resolution to consider them, and not to relinquish, in despair, the work of reformation. The mode of constructing our wharves and slips would almost induce the belief that they had been designed for repositories of filth and nurseries of disease. The *made ground* on the East river is pregnant with almost annual

pestilence; it is now become enormously extensive; it was originally composed of the most corrupt materials; from its relation to the river, and the condition of the wharves and slips, it must constantly remain moist; from its surface being nearly level, it receives and retains the collected filth washed down from the higher grounds; and besides all this, the offensive and putrid matter, which a crowded population must necessarily deposit, and which already underlays a great proportion of this part of the city, incessantly augments the mass of corruption. Can it possibly excite surprise, that the scorching heat of summer, operating on the complicated pollution of this ground, formed of an aggregate of nuisances, and still the receptacle of numberless others, should exhale poison and death into the atmosphere which stagnates over its surface?

As the materials of putrefaction and the degrees of heat, in a large city, greatly exceed what is found in the adjacent country; so the diseases arising under such circumstances must be proportionably more malignant. The pestilential fevers of our city differ only in grade from the bilious and remittent fevers of the country. They prevail in the same climates; they come on at the same season of the year; they are chiefly disposed to attack persons of the same constitution; they commit their ravages on the same organs of the body,

and produce symptoms differing only in degree; and they decline and disappear at the same season, and under the same circumstances. In the city we often see in the same family and under equal circumstances of exposure, the malignant forms of pestilence and the mild forms of remittent fever; and in the country, while the great mass of cases are usually mild, we occasionally meet with some which exhibit the violent attack, the intense malignity and the rapid dissolution, which more frequently mark the pestilential fevers of the city.

Besides the points of analogy just mentioned, there is another equally or perhaps more remarkable. The remittent fever of the country, and the malignant fevers (denominated *yellow*) of our cities, have a similar irregularity which generally characterizes them, and leads strongly to the inference of the similarity of their origin. In the districts of the country where remittent fevers prevail, and in the cities which produce malignant fevers, we find these diseases, in seasons apparently similar, and even in the same season, often exhibiting a singular local unsteadiness in their appearance, extent and violence. In the operation of the causes which produce them, there is something remarkably contingent and desultory. Remittent fevers will prevail sometimes in one district of a low country and sometimes in another; while the whole extent of these different districts

seems to be equally liable to the disease, and no adequate cause can be assigned for the visitation of the one, and the escape of the other. In like manner, some of our cities are invaded by pestilence, in unfavourable seasons; while others, apparently just as liable to be invaded, escape.

For these reasons, as well as many others which my limits will not allow me to state, I conclude that our late epidemic, and all the preceding similar ones, have been of domestic origin, and, of course, nearly related to the remittent bilious fevers of the country.

From this simple and consistent view of the subject, the attention of some has been unfortunately drawn aside by the mistaken opinions of the *importation of the disease from abroad*, and *the propagation of it by contagion*.

I. As the question of contagion, in this disease, is important and fundamental, and as the affirmative has been asserted with much confidence, it becomes necessary to consider this point with great attention.

But, before proceeding to offer reasons in detail against the contagiousness of yellow fever, it is proper to premise some general observations on the subject.

A contagious disease is distinguished from all others by the property of generating or secreting a matter, which, applied by contact, or inhaled with the air, by near approach to the sick, or to inanimate substances charged with their effluvia, successively reproduces the same disease. As this contagious matter is secreted by a morbid action of vessels, or a peculiar process of the disease, forming a specific and essential part of its character, it must always be generated when such disease exists; and being generated, and then duly applied or inhaled, its action is altogether independent of external circumstances, such as the state of the air, &c. and must always take effect, unless there be something in the condition of persons exposed to it, which renders them unsusceptible of the impression. This unsusceptibility, depending upon peculiar and unusual circumstances, (except in the diseases which attack the same person but once,) must of course be extremely rare. The small-pox affords an example of this operation of contagion. If forty persons, who have never undergone small-pox, be closely exposed to the effluvia of a number of patients lying ill of that disease in the ward of a small-pox hospital, thirty-nine certainly, and probably the whole number, will be infected. This is an example of a contagious distemper. The contagious matter is the constant and universal product of the disease; and when produced, it generally re-

produces itself in such as receive it; provided they have not been (in the case of small-pox) previously subjected to its action. The principle of unsusceptibility cannot reside in the surrounding air, but is to be sought for in the condition of the body that resists the contagion. There are no facts to prove that pure atmospheric air is a neutralizer or destroyer of contagion; every day presents instances of the reverse; and when diffused through an extensive space, air renders it harmless, not by decomposing, but by diluting and dissipating it. On the other hand, none of the truly contagious diseases derive any additional force from impure air; for the greater contagiousness of confined air in cases of this sort, arises merely from the concentration of a greater quantity of contagious matter within a small space. The application of these principles to the subject in question will presently be seen.

It is proper likewise to premise, that the attack of many persons in the same neighbourhood, or even of whole families, by a reigning disease, affords no proof of contagion;* for the intermittent

* In the course of the autumn, about five years ago, ninety-eight out of a hundred of the labourers employed at the *Onondaga Salt-Works*, in this State, were attacked with bilious fever. The two who escaped, probably owed their exemption to extensive ulcers with which they happened, at that time, to be affected. That situation is unusual-

and remittent bilious fevers of the country, which undoubtedly are not propagated by contagion, often attack families and neighbourhoods so generally as scarcely to leave healthy persons in sufficient number to attend the sick. The want of due discrimination between the effects of an *impure atmosphere* and of *contagion*, is one of the most lamentable deficiencies in the history of diseases.*

The agency of contagion in the propagation of our malignant disease is rejected for the following reasons.

ly sickly in the summer and autumn ; and a large proportion of the cases of fever which occur there, become malignant and fatal. By the death of several persons, within a few years, who held the office of Superintendant of the Works, and who fell victims to this malignant fever in close succession, that station is now justly regarded by the people of the neighbouring districts, as extremely hazardous.

* Some epidemic diseases, such as small-pox, syphilis, &c. are considered, by universal consent, as *contagious ;* others, such as intermittent and remittent fevers, &c. are considered as *non-contagious*. It becomes, therefore, extremely interesting to ascertain the criteria by which this discrimination among epidemic distempers may be clearly and promptly made. The want of precision on this point has produced much collision of opinion and much absurdity of conduct among physicians and others. The most obvious criterion, and that which is most generally recognized by the common sense of mankind, is the effect of personal intercourse be-

1. No relation is observed between the source of the pretended contagion, and the spreading of the disease to individuals or families; nor was there ever any successful attempt progressively to trace the propagation of it to any number of persons, from the first case, or from any single point of infection. If the first ten or twenty cases, which occur in any season, be strictly scrutinized, most of them are found, in their origin, to be distinct and independent of one another. Instead of pervading families, or creeping slowly from one neighbourhood to another, in the track of infection, as is invariably the case with contagious distempers, this disease is often found scattered at distant and unconnected points, and cases start up singly in situations where contagion could neither be traced nor suspected.† The proportion of single cases

tween the sick and the well. Where a disease is truly contagious, this intercourse cannot fail to disclose the danger, which was long ago correctly stated in poetical language:

———obsuntque auctoribus artes:
"Quo propior quisque est, servitque fidelius ægro,
"In partem lethi citius venit."

Ovid. Metamorph. lib. 7.

† Not only the dispersion of cases is adverse to the doctrine of contagion; but the appearance of them in groups in some instances is altogether as much so. Many of the most judicious of our citizens were convinced of the origination of the disease from domestic filth in the year 1798, by the following occurrence. Between twenty and thirty persons.

in the midst of families is always great ; and the instances of any large proportion of families being attacked were comparatively very rare in our late epidemic. It appears from the records of this epidemic, that there were thirty-one streets of the city, most of which continued to be filled with inhabitants, through the whole season, in which only a single case in each occurred ; and in the mass of six hundred cases reported to the Board of Health, there were only thirty-five houses in which more than a single case was found. If the number of deaths should be supposed to afford better ground of calculation, it will be found that there were forty streets, and those generally crowded throughout the season, in which only one death in each took place ; not more than three died in any one house, of which there were only two instances ; and, during the whole epidemic, there were only twelve instances of two persons dying in one house.* The great mass of persons attacked with

at the commencement of that destructive epidemic, in a small neighbourhood at the lower end of John-street, were suddenly seized with the disease in one night, in consequence of a blast of putrid and most offensive exhalations from the sewer of Burling-slip. The persons attacked were only such as lived directly to the leeward of this blast from the sewer : while many others, close in the vicinity, but not exposed to this current, entirely escaped.

* From these reports to the Board of Health, it results that upwards of five hundred, out of six hundred cases of

the disease, consisted of such as never had approached the sick, or any other assignable source of contagion ; and, on the contrary, as will presently appear, great numbers were exposed to close intercourse with the sick, without injury.

In order to explain this scattered, remote and unconnected occurrence of cases, the advocates of contagion are obliged to resort to the extravagant supposition of the contagion being diffused through an extensive range of atmosphere, or, to use their own singular phrase, of an *inoculation of the atmosphere* by the effluvia of the sick, or of the infected cloathing or bedding which were supposed originally to have introduced the contagion. It is scarcely necessary to observe, that this is a new and unheard of doctrine, utterly unknown and repugnant to all the principles and laws of the communication of contagion, which have been sanctioned by the experience of ages, and entirely subversive of all the hopes the contagionists themselves can repose on a separation of the sick from the well, or on the most rigid regulations of quarantine. This doctrine is likewise inconsistent with itself. If contagion from a single source can

malignant fever which occurred, were single in the respective families ; and that more than three-fourths of the deaths which took place in the city, were likewise single in the respective families in which they occurred.

extend itself so far, what would become of the inhabitants of the city generally, when, in the progress of the epidemic, cases are so immensely multiplied, and the disease so extremely diffused? If this contagion can exercise such a destructive activity at a distance, after being so much diluted in the air, what must be the effect of approaching near to the source? If a contagion really existed, capable of retaining its virulence, after such extensive diffusion in the atmosphere, it would bid defiance to all the barriers of quarantine, be uncontrollable by human means, and finally would depopulate the world. Another inconsistency is equally glaring. If this effluvium from a sick body, or from foul cloathing and bedding, can be supposed to vitiate the air to such a distance around, it must, after such extensive diffusion, become light and fugitive, and liable to be blown away by the first breeze. But, how shall we explain the fact, that this same space of air, after the inhabitants are fled, the sick removed, and the houses shut up, continues, till a change of season, to be permanently noxious? Nothing can account for this local, stationary and inexhaustible poison, but the exhalations from the masses of filth and corruption overspreading a large area of ground, forming a vast hot-bed of putrefaction, incessantly teeming with miasmata, and thereby, in despite of currents of air, loading with the seeds of disease every successive portion of atmosphere

that sweeps or stagnates over the pestilential surface.

2. The pretended contagion is admitted to produce no effect in our climate, except in particular situations, and at a particular season of the year, when an impure and noxious atmosphere, which ought to be considered as a sufficient cause, is acknowledged to exist. But to consider a disease as contagious, which at the same time exhibits no appearance of that quality but in certain climates, in such climates only in certain places, at such places only at certain seasons, and even at such seasons only after a particular degree of heat and moisture, is undoubtedly to lose sight of all the established properties and laws of contagion.

3. It is admitted that the disease does not spread when the sick are removed from the impure air in which it was contracted. By breathing this impure air, without exposure to the effluvia of the sick, persons are every day attacked; while, on the contrary, without breathing it, however exposed to such effluvia, no person is attacked. The conclusion, therefore, is irresistible, that the impure air is the cause.

4. No communication of the disease was ever observed in yellow fever hospitals, situated at a small distance from the cities to which they be-

long. No exception to this has ever occurred in any of the numerous seasons of this pestilence at our hospital at Bellevue, the Marine Hospital at Staten Island,* that of Philadelphia, or any other in the United States; provided the malignant air of the city had been avoided. The force of this fact seems never to have been duly considered or appreciated. The numerous retinue of medical attendants, nurses, washerwomen, servants, &c. which belong to a hospital, must be known to every body. How greatly they are all exposed to contagion, if it could be supposed to exist in this case, is equally known. The most malignant degrees of the disease are constantly found in these institutions. The exposure of physicians and their assistants is well understood. The duty of the nurses leads to an incessant and unreserved intercourse with the sick. They pass the greater part of their time, and sleep in the apartments of the sick, the dying and the dead.† In

* The two pretended cases of contagion at the Marine Hospital on Staten Island, one in the year 1799 and the other in 1800, were evidently fevers produced by the poison of typhus, modified by the season. Nature is too simple and uniform in her operations to constitute a disease contagious, and yet only so once in a thousand instances.

† The nurses at Bellevue Hospital became so entirely free from all apprehensions of the contagiousness of this disease, that they often slept on the same bed with the sick; and it happened more than once, in the course of the season,

lifting, undressing, dressing, administering remedies, and many other modes of assistance, they are very often in actual contact, and commonly within a small distance of the patients. They receive and carry away all excrementitious discharges. Several persons are employed in washing the foul clothes and bedding of the sick and the dead. Not only all these have invariably escaped the disease, but likewise all the persons occupied in the removal of the sick from the city to the hospital, who in this service went without reserve into the most pestilential quarters of the town, entered the most filthy apartments, and lifted the sick into their carriages dressed in their foulest clothes, and sinking under the worst degrees of the disease.*

In order to account for these facts, the advocates of contagion contend that its activity is confined to *impure air*, and that by this alone it can be *conducted* to the objects of its attack. Our hospital

that a nurse, overcome with fatigue and want of sleep, threw herself in the night, for a little repose, on the bed of a dying patient, and remained there asleep till the patient was dead, and it became necessary to remove the corpse.

* In order to account for the escape of these persons, which is indeed wonderful, it is proper to state that they all resided during the season at the Alms-House, an elevated and healthy part of the city, and consequently were only for a short period, at any one time, immersed in the noxious atmosphere.

at Bellevue, however, is not so constructed as to allow the supposition of great purity of the air; and indeed the state of the land-air in the months of August, September and October, cannot be considered as pure, in any part of our country. But admitting the highest possible purity of air in these hospitals, the operation of contagion, if it existed there, could not by such means be avoided. When the naked hands of physicians and nurses are in contact with the skin of the patient, scorched with febrile heat, or bedewed with the matter of perspiration, how can pure air be interposed to arrest the passage of contagion? When they inhale, as they often do, the breath and effluvia of the sick, no man can doubt that such air is sufficiently impure to be the *conductor* of contagion, if it really existed. In all contagious diseases, contact and immediate inhalation of the effluvia and breath of the sick, are supposed to constitute the greatest possible exposure; and in such cases, it is plain, the interposition of air, pure or impure, must be equally unavailing to arrest the evil. Yet in these hospitals, persons not only escape this danger, but none was ever known to be infected by it.‡

‡ In the epidemic of the year 1798, seven persons died of Yellow Fever in our Alms-House. It was ascertained that they had taken the disease in consequence of going out and breathing the atmospheric poison diffused through the more

5. The extinction of the disease by cold weather, is an insuperable objection to the doctrine of its propagation by contagion. That the disease in reality depends upon an atmospheric poison, appears from the fact, that all the means which operate to arrest and destroy it, such as cold, heavy rains and high winds, are merely atmospheric agents. The healthy temperature of the human body is the same in all climates and seasons; and febrile heat is not less in winter than summer. Consequently, the morbid process by which the matter of contagion is generated, is under no control from atmospheric temperature. Hot climates and seasons are universally held to be unfavourable to the spreading of contagion. The reason is obvious. In warm weather, the doors and windows of the apartments of the sick are kept open, and ventilation is carried to the highest degree. At this season, the effluvia of the body, whether in health or disease, are sooner dissipated, and, of course, can less readily adhere to clothing, bedding, walls, furniture, &c. so as to be retained, and become noxious. In conformity to this, typhus, which is propagated by a poison produced in the clothing, bedding, furniture, &c. of persons living in filthy and crowded apartments, generally

contaminated districts of the city. Although the house then contained about 800 persons, no communication of contagion took place.

prevails and spreads much more in winter, when such apartments are deprived of ventilation. On the contrary, yellow fever, arising from a deleterious principle floating in the atmosphere, and produced by the operation of solar heat upon vegetable and animal filth, ceases to prevail soon after this heat is reduced so low that it can no longer exhale a sufficient quantity of the miasmata of putrefaction. But if this disease depended upon contagion, instead of disappearing at the accession of cold weather, when houses are more closely shut up, it would be then more certainly communicated, and more widely destructive.

6. Yellow fever does not prevail in countries, where the heat is not sufficient to exhale the miasmata of foul grounds, and other corrupting matters, in the requisite quantity and virulence. We hear nothing of this disease in Great Britain, Ireland, or France; though it is well known that persons ill of it, and shipping in which it has recently prevailed, very frequently arrive in their ports. The boarding-houses in the sea-port towns of these countries, in which seamen arriving from the West-Indies are generally lodged, are known to be often extremely filthy and filled with impure air; as appears from the prevalence and ravages of typhus; yet this impure air in those countries cannot *conduct* the contagion of yellow fever.

7. Many persons, who had contracted the disease in New-York, died of it at Boston, Albany, and other cities at a distance; many likewise at Greenwich, Brooklyn, and other villages in the neighbourhood. In no instance did these victims of the epidemic communicate contagion. In all these places, the air at that season must have been very *impure;* at Albany and Brooklyn, violent remittent fevers were at the same time extremely prevalent; and yet this impurity of the air did not serve as a *conductor* of contagion.

8. Among the early cases of this disease, in the late season, which were, as usual, most virulent, very striking examples of its non-contagiousness were displayed in some of the most crowded quarters of the city. In the beginning of September, a considerable number of sick, who had taken the disease on the eastern side of the city, were removed to the western side, where they died with the most pestilential symptoms. In a house in Cedar-street, where two patients expired under the worst symptoms of this description, the * beds

* It is proper to observe that, since the first publication of this letter, a contradiction of the statement concerning the beds has been received from one person, and a confirmation of it from another. That particular circumstance is, however, immaterial; as it is admitted on all hands that no contagion arose from either of these malignant cases.

of the deceased, in a very few hours after their death, were occupied by the survivors of the family. Yet in none of these numerous instances was any contagion communicated.

9. The universal exemption of the physicians of New-York, amounting at least to 50 or 60 persons, from the late disease, is also irreconcilable with the doctrine of its contagiousness. I have not heard of any physician in Philadelphia, New-Haven, Providence or Norfolk, suffering illness from their late epidemics. It is known that physicians neither use nor possess antidotes. Their exposure to the breath, effluvia and contact of the sick, was almost incessant from morning till night. They employed no precaution of dress or covering, no fumigation, no means of destroying, neutralizing or obviating, in any manner, the effluvia of their patients. The dissection of bodies dead of Yellow Fever, if contagion had existed, would also have formed another source of danger. Many of the physicians of this city were frequently engaged in this mode of investigating the disease, and minutely examined bodies in a very advanced state of putridity. The more happy escape of physicians in the late than in former epidemics, is to be attributed (under the protection of Divine Providence) to their having secured a residence in the higher and safer parts of the town, and to the comparative infrequency of their visits to the dis-

tricts of envenomed atmosphere; owing to the early desertion of these districts by the chief part of the inhabitants. It is understood, at the same time, that our physicians, in their confidence of the non-contagiousness of the disease, generally passed more time in the apartments of the sick, and were in the habit of making a more deliberate and minute examination of the cases which fell under their care, than in preceding epidemics.*

10. The failure of every attempt to arrest the progress of the disease, by the separation of the sick from the well, is also incompatible with the doctrine of contagion. Besides the numerous ineffectual attempts in this city, the utmost endeavours were used, with the same result, by the Board of Health of Philadelphia, whose members had been purposely selected for this object, from those who embraced the opinion of the importation and contagiousness of the disease. It would be fortunate, indeed, for the purpose of arresting Yellow Fever, if its progress depended upon con-

* The exemption of the nurses from disease, who attended the sick *in the city*, was also very remarkable. Upwards of sixty persons were employed, by the Board of Health, to perform this duty. Only four of these died; two others only were sick and recovered. And it appears, upon inquiry, that such as died or were sick, had been stationed in the parts of the city where the atmosphere was known to be most highly charged with the miasmata of putrefaction.

tagion. This appears from the example of the small-pox, a disease whose contagion is more active, steady and permanent than any other in the world. By a system of quarantine, extremely simple and very little burthensome, this distemper is excluded, or, if introduced, immediately arrested and banished, in Boston and other cities of New-England, where its admission and circulation are prohibited by law.

11. The inconsistency and contradiction which constantly attend the application of the doctrine of contagion in this disease, make it altogether inadmissible. To explain one set of facts, it must infinitely transcend the contagiousness of small-pox; to suit another, it must sink infinitely in the opposite direction. On some occasions, it is more subtle, penetrating and rapid than the electric fluid; on others, more sluggish and dormant than the grossest matter. Contrary to all other noxious substances, it is often more destructive at a distance, than near to its source; for at one time, it cannot reach a single individual among a great number surrounding the bed of the patient, and in frequent contact with his person, while at another, it must strike at the distance of several hundred feet.* THE NOXIOUSNESS OF THE

* While it is admitted that contagion cannot operate in Yellow Fever Hospitals, and while this inactivity of it is as-

MIASMATA OF PUTREFACTION, EXHALED BY HEAT AND FLOATING IN THE ATMOSPHERE, EXPLAINS ALL THESE FACTS, AND RECONCILES ALL THESE CONTRADICTIONS.

If it were possible to add any thing to the evidence of these irresistible facts, I might subjoin, that Yellow Fever cannot be considered as a contagious disease ;—Because, unlike all other contagious diseases, it has no specific character, no definite course or duration, and no appropriate, essential or pathognomonic symptom ;—Because, the supposed contagion rarely operates singly, and in general depends upon the co-operation of exciting causes ;—and finally, Because, the miasmata which produce this disease are more or less noxious as they are more or less concentrated, a property which does not belong to the specific poisons of small-pox, syphilis, &c.

Under the conviction of these facts, I am compelled to conclude that our malignant disease is

cribed to the absence of impure air; it is, at the same time, gravely asserted by some, that a person going on board of a vessel, lying in a situation where the air is much more pure than it can possibly be at a hospital, even though there exist no sickness on board of such vessel, may still derive contagion from it, and experience all the active and malignant operation of such contagion, notwithstanding this purity of the surrounding atmosphere.

the effect of a noxious exhalation floating in the atmosphere, and that it is ABSOLUTELY AND UNIVERSALLY NON-CONTAGIOUS.

For the correctness of the facts on which this conclusion is founded, I appeal to my fellow practitioners and fellow-citizens, who have been witnesses of the disease. For the application of these facts in the deduction of principles and opinions, I appeal to the judgment of physicians in every quarter of the world, where Medicine is cultivated as a regular science. And, especially, I would offer this appeal to the liberal and enlightened physicians of Europe, who are sincerely devoted to the cause of truth and professional improvement; who, on this subject, have heretofore received much incorrect information; and who, as soon as they become convinced of the real state of the question, will, I am confident, exert the influence they so justly possess, in procuring from their respective governments an abolition of the oppressive and useless restrictions of quarantine, which have been recently imposed on American commerce.

II. The second mistake concerning this malignant disease, which has been impressed on the minds of some of our citizens, is that of its *importation from abroad, and chiefly from the West-*

Indies. This opinion is rejected for the following reasons:

1. The non-contagiousness of the disease, if admitted, must entirely destroy the belief of its introduction from abroad. It is impossible to conceive that it can be conveyed across the ocean, and propagated in the cities of the United States, unless it possess the power of successively re-producing itself by communication of contagion from one person to another.

2. If the alleged importation were possible in any case, it might happen at any season of the year. In this active sea-port, shipping from the West-Indies are very frequently arriving at all seasons; and it is known that yellow fever may be found in those islands at any period of the year, when they are visited by strangers from the higher latitudes: yet the pretended importation is always confined to that period of the summer and autumn, when local and domestic causes, sufficient to produce the disease, are known to exist.

3. If yellow fever could be introduced from abroad, it is impossible to explain its non-appearance in our sea-ports for a long series of years, when no means were used to secure its exclusion. For more than fifty years preceding 1795, no importation of the disease into this city was suspect-

ed; and it is indeed uncertain whether, before that year, the opinion of its importation at any period of the eighteenth century, had attracted much attention. The advocates of importation generally assert, that periods of war in the West-Indies are most apt to occasion its introduction into this country. Yet we hear nothing of its being brought to this port during the war of 1756, or that of the American Revolution. In the former of these wars, the mortality attending the successful expeditions against Martinique, Guadaloupe and the Havanna, was almost incredible. Only a very small part of the victorious troops were alive three months after their conquests. Equally fatal were the malignant fevers of the West-Indies in the war of the American Revolution. Dr. Hunter* informs us, that of 5,000 troops who took possession of St. Lucie, scarcely a man of the original number remained at the end of one year; although the sword of the enemy had destroyed an inconsiderable amount. The mortality continued as great in the subsequent years. From the 1st of May 1780, to the 1st of May 1781, the number of dead was equal to the average strength of the garrison during the year. Of the troops sent from Jamaica upon the expedition against Fort St. Juan, scarcely a man ever returned. During this period, the intercourse between the West-In-

* Observations on the Diseases of the Army in Jamaica.

dies and the port of New-York, must have been extremely frequent. Doctor Blane * states, that in the course of the war of our Revolution, nearly 18,000 sick were landed at New-York from the British fleets; that 11 sail of the line arrived here early in September, 1780, from the West-Indies; that 26 sail of the line arrived here at the same season in 1782, likewise from the West-Indies; and that from each of these fleets, a great number of sick, afflicted with malignant fevers, were sent to the hospitals at this place. It is also known that a similar fleet arrived here in the beginning of the autumn of the year 1781. During all this period, notwithstanding the ravages of yellow fever in the West-Indies, and the conveyance of so many sick to this port, we hear nothing of the importation of the disease. And yet, at that time, no quarantine-regulations existed.

The contingencies by which yellow fever might have been imported, through the medium of commercial shipping or of naval and military expeditions, if such importation were possible, must very often have occurred in a sea-port like this, where such extensive communication has been so long maintained with the West-Indies. A more frequent introduction of the disease, therefore, according to the doctrine of importation, as now held, must have been inevitable. But as this did not

* Observations on the Diseases of Seamen.

take place for such a length of time, and under circumstances so likely to produce it, we are warranted in the conclusion that importation is impossible.

On the contrary, as the history of pestilential epidemics in all ages and countries demonstrates that they are subject to frequent revolutions, as to the periods and places of their prevalence, the variety of their symptoms and the degrees of their malignity ; it is much more easy to account for changes in such diseases, as they locally or periodically occur, than for any great diversity or fluctuation in the circumstances or contingencies, which determine their importation from abroad.

4. No importation of this disease, so as to become epidemic, was ever known in any port of Great Britain, Ireland or France. The vast amount of shipping, as was observed before, which arrive at those ports from the West-Indies, is well known ; and, that they often arrive in a very sickly condition, is equally known. The filth and impure air of those ports are admitted on all hands, and the effects of them are experienced in the destructive fevers of a different description which frequently prevail ; and yet, for want of the atmospheric heat and other local circumstances requisite in the generation of yellow fever, they are happily strangers to its epidemic prevalence.

5. The appearance of yellow fever in many of the interior parts of the country, inaccessible to foreign contagion, confirms the opinion of its domestic origin, while it entirely invalidates that of its importation. There is not a State in the Union, which has not afforded evidence of the production of the disease, in situations where importation was impracticable. In the course of the late season, a malignant fever, in all essential points the same as our yellow fever, prevailed in many parts of this State, and caused more mortality, in proportion to the population of the district, than took place in this city. There can be no reasonable doubt, that the disease called the *Lake Fever*, in the interior of this State, possesses all the essential attributes of the yellow fever.

6. A comparison of the summer and autumn of the year 1804, with the corresponding seasons in 1805, will go far to shew the dependence of our malignant epidemics on the condition of the atmosphere, and, of course, to overthrow the doctrine of importation. The summer of 1804, was mild and cool, beyond former example, on all the Atlantic coast of the United States, lying to the northward of the Carolinas. In South-Carolina and Georgia, the heat was unusually great. All the Atlantic cities north of the Carolinas, without exception, entirely escaped the epidemic ; whereas at Charleston and in some parts of Georgia, it

prevailed with great mortality. On the contrary, the late summer was remarkable for the duration as well as the intensity of heat, along the whole of our coast. And the consequence was, not only that nearly all the Atlantic cities were visited with pestilence, but, what was still more surprising, that in several of them it made its appearance within forty-eight hours, or nearly, of the same time; an occurrence which cannot be explained on the contingency of importation, and is only to be satisfactorily accounted for from the state of the atmosphere.

7. The occurrence of similar diseases in other parts of the world, under similar circumstances, where contagion introduced from abroad cannot possibly be suspected, is also adverse to the doctrine of importation. In making the circuit of the globe, on the parallels of latitude nearly or exactly corresponding with ours, we pass over countries which, from the earliest records of history, have been frequently visited with the ravages of this disease. Spain and Italy afford striking examples. The city of Rome, in particular, though its elevated situation is generally salubrious, is annoyed by a marshy spot at the feet of two of its hills, along the margin of the Tiber, which has been sickly and pestilential from the origin of the city. While the streets on the hills, like Broadway and other high grounds in this city, enjoy a salubrious

air, the spot of marsh just mentioned, together with a small extent of *made-ground*, (for the madness of *making ground* has raged at Rome as well as at New-York,*) corresponding with our marshy districts and vastly more extended space of made-ground, along the margin of the East-River, has produced, from time immemorial, malignant and mortal epidemics. And the medical historian of these facts, (the celebrated Baglivi) expresses his astonishment that so small a distance, as that intervening between the elevated and depressed portions of ground, should make such a difference in the qualities of the air. As the Tiber is not navigable for sea-vessels, the importation of their pestilential epidemics at Rome was never suggested.

8. The inefficacy of all the various modifications of quarantine hitherto devised in this country, confirms our disbelief of importation. In this port, as well as in Philadelphia, a rigid system of

* Proofs of this might be adduced from Lancisi and other medical writers of Rome. The following lines are sufficient to establish the fact:

Hoc, ubi nunc fora sunt, udæ tenuere paludes;
Amne redundatis fossa madebat aquis.
Curtius ille lacus, siccas qui sustinet aras,
Nunc solida est tellus, sed lacus ante fuit.
Quà Velabra solent in Circum ducere pompas,
Nil præter salices cassaque canna fuit.

Ovid. Fast. Lib. VI.

quarantine has been in operation for many years; and there is no doubt of its having been vigilantly and faithfully executed. Indeed, the experience of quarantine in the United States speaks little in its favour; for though, during the last ten years, it has been scrupulously enforced in several ports, we have heard ten times more of imported contagion and of its ravages, at these very ports, during that short period, than for an hundred years before, when no quarantine was in existence.

9. The entire want of all proof, and even of the least probability, of the introduction from abroad of the germ of our late epidemic, gives the last blow to the doctrine of importation. The facts on this subject have been so clearly and minutely detailed by the Health Officer, that it would be superfluous to repeat them here.

The source of mistake on the subject of importation, consists in not distinguishing *a febrile poison generated by heat and filth in a vessel*, from *contagion taken up in a foreign port, and successively communicated from one person to another.* The construction of vessels disposes them to the collection and retention of filth, and renders cleansing and ventilation extremely difficult. The quality of cargoes and provisions, the inattention of seamen to cleanliness, the crowded manner in which they often live, the unsuspected and inac-

cessible situations in which corrupting substances may lie concealed, render shipping, independently of the hazards of the element on which they move, the most dangerous of all human habitations. It is no wonder, therefore, that they should become unhealthy, when they pass into warm latitudes, or lie in our harbour in the hot season. In no situation is a malignant fever more apt to originate than in a ship. A vessel that never left our port, or that has remained in it for years, may become foul and thereby generate and emit a deadly exhalation. Whether malignant fever arise from filth ashore or on shipboard, the principles and process, by which the evil is produced, are still the same. On what ground can a disease be said to be *imported*, which has no other relation to a foreign country, than that of being generated in a vessel which has lately visited that country? The foreign country, the outward and homeward voyage, are circumstances of no moment in determining the origin and character of the disease; to account for this, we must consider the filth, the moisture and heat, which, concurring to a certain degree, are destructive to man at all times, in all situations and under every condition. And a fever originating under such circumstances, can no more be pronounced *imported*, than a fracture of a limb happening at sea can be called an *imported fracture*.

It has been supposed by some, who regard only one aspect of the subject, that the doctrine of importation alone can explain the more frequent recurrence of malignant epidemics for the last ten years. But the difficulty still returns with unabated force; and it remains to explain, why importation has become so much more frequent and easy of late than formerly. If it be thought impracticable to throw light on that peculiar constitution of the air, which determines the prevalence of yellow fever at one time more than another; it is equally impracticable to ascertain the qualities of the air which produce malignant distempers of the throat, the dysentery, and other mortal epidemics, (which are undoubtedly of domestic origin) for a season, or for a term of years, and then allow them to disappear.

It has been said, that the belief of the yellow fever originating in this country, would be destructive to its commerce and prosperity. But if the appeal must be made to interest rather than truth, let us contrast the effects of the two opinions, as they influence our intercourse with foreign nations. By truly describing the disease, and exhibiting the proofs of its local origin and non-contagiousness, we convince foreign nations that it is a misfortune limited to ourselves, that it cannot endanger their safety, and that it only claims their sympathy and regrets. By asserting the im-

portation and contagiousness of it, the evil immediately swells to an indefinite and incalculable extent, and we alarm all nations with the fear of its being, in turn, exported to them. After the experience already gained, neither they nor we can cherish any rational hope of hereafter excluding it, by regulations of quarantine. Our intercourse with the West-Indies, and with all other tropical countries, will be daily extended, and if importation were possible, the chances of it will be every year progressively multiplied. On the ground of importation, unless trade be totally forsaken, our situation is hopeless.

In rejecting the doctrine of importation, the benefits of quarantine are by no means intended to be undervalued. The generation of pestilential disease in foul vessels is undeniable ; they are certainly a very frequent source of malignant sickness ; and all persons concerned in shipping are interested in a careful examination of them. There ought undoubtedly to be some mode of ascertaining whether a vessel may be safely approached by people in business, or whether she may be likely to diffuse pestilential vapours among all who come within their reach. Quarantine is also one of the most humane regulations in favour of seamen, who are confessedly a very useful and necessary class of the community. It interposes between them and the carelessness or cruelty of their com-

mander, and makes it his interest to preserve their lives and health. And while it might be organized so as to answer all these purposes efficaciously, it might also be properly stripped of some of its useless and burthensome appendages.

If the facts and reasonings, which I have adduced to prove the non-contagiousness and non-importation of yellow fever, be well founded, it results that our epidemics are local, domestic, and as incapable of exportation to foreign nations, as the bilious fever of the country. It is to be lamented that the reverse of this opinion has made so deep an impression in Europe ; and that the governments of that quarter of the world have suffered themselves so lightly and hastily to embrace doctrines and legislate on principles contradicted by all former experience. It is now more than 300 years since they became acquainted with America. And although the first discoverers of the new world, as well as most succeeding adventurers, have largely shared the effects of the baneful climate of the West-Indies, it is only of late that apprehensions have been entertained of importing into Europe the malignant fevers of those islands. The shattered remains of fleets and armies had often returned home to Great-Britain and France, in the most sickly state, after encountering all the horrors of yellow fever, without once communicating that disease. But what

transmutation can yellow fever undergo in the United States, which renders it exportable to Europe from us, but not directly from the West-Indies?

It affords some apology indeed for Europe, that the information concerning this subject, upon which they have acted, was derived from our own country. The acts of our State Legislatures, the proceedings of our Municipal Bodies and Boards of Health, the proclamations of our Magistrates, and a variety of other public documents, have all a tendency to impress the same opinion. We have held up to foreign nations, an indigenous and local disease, growing up from the infelicities of particular situations, or from neglects of police, and entirely incommunicable from one person to another, as highly contagious, capable of exportation to distant countries, and consequently alarming to the safety of the whole commercial and civilized world. We cannot transplant the disease from this city to the neighbouring villages of Greenwich, Brooklyn, or Newark; and yet it is believed we can convey it 3000 miles across the pure air of the Atlantic. Whole hospitals of patients, labouring under the most malignant forms of the disease, with all the foul apparel, bedding, &c. polluted with the excrementitious discharges and other filth of the sick, the dying and the dead, cannot emit an atom of contagion; and yet we pretend

to dread the infectiousness of a sailor's jacket or handkerchief, or even of the cordage and timbers of a vessel. Under the influence of this phantom of contagion, we have instructed the Europeans to enact laws and regulations, sanctioned by the highest penalties, which retard and oppress our commerce, and subject our shipping in their ports to the most grievous detention. To crown the whole of this injury and humiliation, we have instigated them to place the people of the United States, by late extensions of quarantine, on the same footing with the degraded and detestable inhabitants of Barbary, Egypt, Syria, the Archipelago, Constantinople and other parts of the Turkish dominions. And all this has been done, in defiance of clear and luminous facts, and in the face of long, reiterated and ample experience.

By discarding the bugbear of contagion, the origin and nature of Yellow Fever will be more truly ascertained; the means of personal safety more generally understood; and the measures necessary to improve the salubrity of the city more vigorously pursued. The public will no longer witness that desertion and misery of the sick, which have too often disgraced society, in every epidemic. The bosom of humanity will no longer be wrung with the sufferings of our fellow-creatures, driven, while under the pressure of this calamity, from every place of shelter, deprived of

comfort, and abandoned to their fate, from the false impression of danger in affording them assistance. By telling the community the truth, we shall lessen apprehension and distress, we shall disarm the evil of half its power, and restore the ties of kindred and of nature.*

* The learned Dr. Hunter, one of the members of the National Board of Health of Great Britain, offers the following argument in support of his opinion of the non-contagiousness of Yellow Fever. "The strongest proofs of this, in my opinion, were to be met with in private families, where the son, the brother, or the husband, labouring under the worst fevers, were nursed with unremitting assiduity by the mother, the sister, or the wife, who never left the sick either by day or by night, yet without being infected. That such near relations should take upon them the office of a nurse, is matter of the highest commendation in a country, the diseases of which require to be watched with greater care and attention than can be expected from a servant. They are under no fears of the fever being infectious, and I never saw any reason to believe it to be so, either in private families, or in the military hospitals." That Dr. Hunter came to this decision, after a full and mature consideration of the importance of the subject, will appear from the following remarks: "There is hardly any part of the history of a disease, which it is of more consequence to ascertain with accuracy, than its being of an infectious nature, or not. Upon this depends the propriety of the steps that should be taken, either to prevent it, or to root it out. It is productive of great mischief to consider a disease as infectious, that really is not so; it exposes such as labour under it to evils and inconveniencies, which greatly aggravate their sufferings, and often deprive them of the necessary assistance. They are neglected, if

It is surely time to investigate this subject with the deepest attention, and to adopt some adequate system of relief. The warning voice of history and experience loudly calls us to make every exertion to deliver our city from nuisances, which threaten to entail the miseries of an annual succession of malignant epidemics. WE LIVE IN THE LATITUDE OF PESTILENCE, AND OUR CLIMATE NOW PERHAPS IS ONLY BEGINNING TO DISPLAY ITS TENDENCY TO PRODUCE THIS TERRIBLE SCOURGE.† The impurities, which time and a police, rather moulded in conformity to the usages of more northern countries than to the exigencies of our own, have been long accumulating, are now annually exposed to the heats of a burning summer, and send forth exhalations of the highest virulence. The examples of similar calamities in many parts of the old continent, ought long since to have taught us lessons

not shunned ; and at the time they require the greatest care and attention, they have the least."

Observ. on the Diseases of the Army in Jamaica, page 177 & 178.

† To convince the reader of this, it is only necessary to remind him how near the cities of Philadelphia and New-York lie to the parallels on which Rome and Constantinople are situated. It is scarcely requisite to observe, that the ravages of pestilence in these ancient cities have far exceeded any thing which has occurred elsewhere, unless those of Grand Cairo should be supposed to equal them.

of wisdom. In the city of Rome, time and fatal experience pointed out the necessity of erecting extensive and costly public works, in order to deliver the inhabitants from the horrors of pestilence; and the air of that city was, at several periods of its history in alternate succession, observed to become pestilential or salubrious, as these public works were suffered to fall into decay, or were repaired and renewed.

The different opinions of the origin of Yellow Fever, offer us only the alternative of a more rigid quarantine, or of more vigorous internal measures. Every step of increasing restriction in our system of quarantine, has only served to shew more clearly the domestic origin of the disease. If an entire prohibition of the West-India trade, or a prohibition during the summer and autumn, were imposed by law, the effect would soon be sufficient to banish every doubt from the mind of the public. How far the advantage of unanimous conviction might be supposed to countervail the burthen of such restrictions for a short period of years, I shall not undertake to decide.

But whatever opinion may be embraced, the present moment is certainly not the time for the indulgence of apathy or inactivity. If the Legislature, in their wisdom, should still think that this disease is introduced from abroad, they are

bound by the strongest obligations to extend the powers of quarantine, by additional restrictions. The conveniencies of trade are not to be put in competition with the ravages of yellow fever. If it be necessary to resign the freedom of commerce, or to incur the miseries of pestilence, let the former be freely abandoned.

It is likewise my duty, before I conclude, to suggest whatever it may be deemed advisable to do towards the removal of existing nuisances, and the improvement of the salubrity of the city. This task has been, in some degree, anticipated in my letter to Governor Clinton, after the epidemic in 1803. Unfortunately, some of the requisite measures will demand great expense, and must bring to a test the liberality, enterprise and public spirit of the City and State. Among the improvements of the most urgent and immediate necessity, I consider the following, to wit; *Water*, obtained from a distant source, of pure quality, and in quantity sufficient to allow a constant, plentiful, and increasing expenditure; *Sewers*, of such number, capacity and construction, as completely to drain all the low and marshy districts, to carry away all filth, and to be constantly washed by a brisk current of water; a new arrangement and construction of wharves, docks, &c. so as to face the margin of the two rivers with a stone quay, impervious to water; a prohibition to make a sin-

gle additional foot of artificial ground on either of the rivers; a different modification of privies, which are every day becoming more and more an alarming nuisance, and will soon underlay with filth a large portion of the city; a better plan of paving, more particularly as respects the construction of gutters, &c.; the draining of all stagnant waters in the town and neighbourhood; the filling up, levelling and paving all low and depressed lots and places of whatever description; and a prohibition hereafter to inter dead bodies in any part of the city. Many other objects, which would require much minuteness of detail, likewise demand attention; and will acquire great additional importance from the rapid progress of building and population.

I have the honour to be,
With great respect,
Your Excellency's most obedient
And humble servant,
EDWARD MILLER,
Resident Physician.

APPENDIX.

UNDER this title, it is intended to lay before the reader some proofs and illustrations of the principles delivered in the foregoing Report, which could not properly be admitted into the letter itself, and which are too long to have been conveniently subjoined in the form of notes.

On the analogy, as to localities and diseases, between the cities of Rome and New-York.

IT is from the south of Europe, and chiefly from *Spain* and *Italy*, that inquirers into the endemic diseases of the United States may expect to derive the most valuable lessons of time and experience. The writings of the Italian physicians in particular, are full of instruction on this subject; and it is to be lamented, that this instruction has not been more eagerly sought for, and more generally obtained by their American brethren.

By considering the following account of the localities and diseases of *Rome*, given by Baglivi, and comparing them with those of *New-York*, we perceive how exactly like causes will produce like effects, in the old and in the new continent.

" Ut res exemplo fiat clarior, exponemus bre-
" viter, quæ nos Romæ circa aëris temperiem, et
" medendi methodum quotidiano usu experimur.
" Aër Romanus septem collibus, Orbis dominis,
" hodie interclusus, naturâ humidus est et gravis ;
" experimento namque constat, quod si quis paulo
" longius a frequentia tectorum processerit, quan-
" tam cœli gravitatem atque intemperiem mani-
" festo concipiet. Insaluberrimis Austri, Africi
" atque Euronoti flatibus obnoxius : ab æstivis
" caloribus interdum tantopere exardescit, ut mi-
" rum non videatur, si Consulibus L. Valerio Po-
" tito, et M. Manlio, Pestilentia orta sit in agro
" Romano, *ob siccitates et nimios solis calores*, teste
" Livio, lib. V. His aliisque de causis infra di-
" cendis, Incolæ urbis temperamento præditi sunt
" melancholico, subfusco, et nonnulli subpallido
" cutis colore, habitu corporis macilento potius
" quam pingui ; levi de causa capite afficiuntur,
" et iis morbis potissimum subjacent, quos aëris
" gravitas solet producere, sicuti sunt pulmonis
" vitia, febres malignæ, cachexiæ, pallores vultus,
" incubus, tabes et consimiles. Porro aër Roma-
" nus squalidus quoque est et insalubris, non qui-

" dem omnibus in locis, sed iis potissimum, quæ " deficientibus ædificiis, pigro atque immoto aëre " sordescunt ; multo magis si Tiberi adhærent, " vel convallium instar, montibus obsepiuntur, aut " exhalationibus subjacent quas veteres parietinæ, " cryptæ, et antiquorum ædificiorum rudera " emittunt. Ex quo patet Regionem Circi Max- " imi, inter Palatinum atque Aventinum sitam, " omnemque illum campum qui inter Aventinum, " ac Tiberim, portamque Ostiensem, jacet, plane " noxium esse et damnabilem. Sed ut rem uni- " versam definiam. Quæcunque loca crebis ædi- " ficiis ambiuntur, atque editiora sunt, in septen- " trionem atque orientem spectant, et multum a " Tiberi distant, salubriora : Contra, quæ se- " juncta sunt, et remota a frequentibus tectis, situ- " que sunt humili, ac maxime in convallibus, tum " propiora Tiberi, in meridiem atque occasum " spectantia, minus salubriora judicantur : Qui- " bus etiam in locis (quod sane mirum) brevis- " simi intervalli discrimine, hic aliquantum salu- " bris existimatur aër ; illic contra noxius et dam- " nabilis.

" Insalubritatem hanc urbani aëris, fovet magna " ex parte adjacens Latium ; quod undequaque " coronâ montium circumcingitur, excepto tractu " illo, quâ mediterraneum vergit, ubi in planitiem " desinit. Vetus enim Latium desertum feré " hodie est et squalidum ; Austri flatibus imme-

" diatè objicitur; et variis ejusdem in locis, in-
" saluberrimus aër observatur, utpote circa Os-
" tiam et Portum, æstivo præsertim tempore;
" quo quidem si aliquis in præfatis aliisque Latii
" locis pernoctaverit, et exinde urbem revertatur,
" corripitur statim maligna febri, quam vulgo, ex
" mutatione aëris dicunt; estque febris hæc sui
" generis, ab aliis febribus, alias agnoscentibus
" causas summopere differens, tum in methodo
" curativa, tum in symptomatis eandem concom-
" itantibus."

Georg. Baglivi Oper. Omn. pag. 157, 158.

Lancisi, in his valuable work *De Noxiis Paludum Effluviis*, confirms the facts stated by Baglivi, and adds many others which are extremely important. In his account of a malignant epidemic, in the summer and autumn of 1695, which ravaged a particular district of the city of Rome to such a degree as nearly to depopulate it, he traces the disease to its cause in the following words:

" Nemo sane luctuosa funera per id temporis
" Romæ conspiciens, fœtoremque in vicis illis
" persentiens, dubius hæsit, quin causa maligna-
" rum, perniciosarumque febrium, quæ publice
" vagabantur, fuerit multitudo stagnantium et
" corruptarum aquarum, tum in scrobibus prato-
" rum, tum in magna cloaca, atque in fossa po-

" tissimum Hadrianæ arcis. Tellus jam erat hu-
" mida, cum Tiberis propter magnam vim aquæ
" bis auctus est; atque idcirco non solum scrobes,
" ac fossæ pratorum et Arcis exhauriri non potu-
" erunt; verum quod maxime aëris insalubrita-
" tem inducit, sordes, quæ pluviis prolutæ ever-
" runtur, ac dilabuntur, iis in canalibus atque in
" cloacis subsistere coactæ sunt. Simul etiam
" per humiliora Leoninæ civitatis loca exundavit,
" subterraneasque cellas, multosque pauperum
" puteos hic illic contemeravit. Posthæc, negli-
" gentia eorum, qui rebus publicis, atque eidem
" præsertim Arci præerant, nullum studium pur-
" gandis hisce regionibus adhibitum fuit. Hinc
" mira hæc proluvies in limosam paludem sensim
" intra fossas scrobesque conversa, virescere, jam
" urgente æstu, fermentari, computrescere, varia-
" que insecta admittere cœpit. His vero malis
" accessit etiam frequens afflatus Vulturni, austri-
" norumque ventorum, qui a medio Maio usque
" ad Septembrem identidem recurrentes, non tan-
" tum deteriori putredini immotarum aquarum,
" verum faciliori quoque sublimationi ac dela-
" tioni malignorum effluviorum non in vicinas
" duntaxat ædes, sed etiam usque ad finitimas
" adversasque regiones, ansam præbuerunt."

Lancis. Oper. Var. Tom. 1. *p.* 189.

On the antiquity of the Yellow Fever.

It has been contended by some, that the yellow fever is a modern disease, and utterly unknown to Europe, except when imported there from America. A slight inspection of the writings of Hippocrates, who flourished upwards of four hundred years before the Christian æra, will be sufficient to prove that he was familiarly acquainted with it, and had observed it under its most malignant and fatal forms.

The two symptoms which are considered as most characteristic of this fever, are *yellowness of skin*, and *black vomiting*. A great number of passages might be adduced to shew that Hippocrates frequently met with these symptoms in the malignant fevers which fell under his care. I shall mention only such as are clear, pointed, and incapable of being mistaken. In the ninth section of his book of Crises, he lays it down as a maxim, that "*in burning fevers, a yellowness of skin appearing on the fifth day, and accompanied by hiccough, is a fatal symptom.*"* This is a

* For the sake of removing all doubt on this subject, it is proper to submit the original to the reader's consideration :—

Εν τοισι καυσοισιν εαν επιγενηται ικτερος και λυξη πεμπταιω εοντι, θανατωδες υποστροφαι λαμβανονται.

very brief, exact, and appropriate description of the disease. A greater number are said to die of yellow fever on the sixth than any other day of the disease; and it very frequently happens that appearances of yellowness are discovered on the fifth, which, at that period, and accompanied by hiccough, constitute a fatal symptom. When the description which Hippocrates gives of *Causus*, or *Burning Fever*, is duly recollected, and there is connected with this fever the occurrence of yellow skin, accompanied with hiccough, on the fifth day, a character results, which can apply to no other disease in the world but yellow fever. And it would be exceedingly difficult, in so few words, to present a more expressive delineation of that distemper.

The terrible symptom of *black vomiting* is also frequently mentioned by Hippocrates, and represented as being of fatal import. He uses the phrases μελαινα χολη black bile, μελανα εμεσον black vomit, and μελανων εμεσον the vomiting of black matter. In the twelfth section of his Prognostics, he asserts, that if the matter vomited be of a livid or black colour, it betokens ill. In the first section of the first book of his *Coan Prognostics*, he enumerates black vomiting in a catalogue of the most fatal symptoms. And also in the fourth section of the same book, he considers porraceous, livid

or black vomiting as indications of great malignancy.*

The importance of this conclusion is further illustrated and confirmed by adverting to the well-known fact, that Hippocrates practised physic for a considerable portion of his life, in parts of Greece situated nearly in the same parallel of latitude with those in the United States, where the yellow fever has produced its greatest ravages.

See Medical Repository, Hex. II. Vol. 3, page 107.

On another account, the writings of Hippocrates offer important instruction concerning malignant fevers. Not the least reference to *contagion* is to be found in any part of them. If personal intercourse between the sick and the well had been the means of spreading these fevers from one individual, or from one family to another, it is incredible that so prominent and glaring a fact should have escaped the notice of a person endowed with such talents for extensive, accurate and discriminating observation.

Yellow Fever indigenous in the Island of Minorca.

By the following quotation from *Cleghorn's Ob-*

* Ει δε ειη το εμευμενον πρασοειδες, η πελιον, η μελαν, οτι αν η τουτεων των χρωματων, νομιζειν χρη πονηρον ειναι.

servations on the Epidemical Diseases of Minorca, from the year 1744 *to* 1749, page 175 & 176, it appears that yellow fever often prevailed in that island more than sixty years ago, and that it was by no means considered as a new or extraordinary disease. It also appears, that the characteristic symptoms of yellow fever are often superinduced on the intermittent fevers of that place, and that their common tertian fevers are only a lower grade of yellow fever. The island of Minorca is situated nearly in our latitude.

" But the utmost danger is to be apprehended, " if a few drops of blood fall from the nose: if " black matter like the grounds of coffee; is dis- " charged upwards or downwards: if the urine " is of a dark hue and a strong offensive smell: " if the whole skin is tinged with a deep yellow, " or any where discoloured with livid spots or " suffusions: if a cadaverous smell is perceptible " about the patient's bed: if in the time of the " fit he continues cold and chilly, without being " able to recover heat; or if he becomes extreme- " ly hot, speechless and stupid; has frequent " sighs, groans, or hiccoughs; and lies constantly " on his back, with a ghastly countenance, his " eyes half shut, his mouth open, his belly swelled " to an enormous size, with an obstinate costive- " ness, or an involuntary discharge of the excre- " ments: which formidable symptoms, as they

" seldom appear before the third revolution of the " disease, so they frequently come on, both in " double and simple intermittents, during the " fourth, fifth, or sixth period, even where the " smallest danger was not foreseen." The author likewise adds, in a note, that " The English " in Minorca are more liable than the natives to " become yellow in these fevers."

On Yellow Fever in the interior of the Country.

SPORADIC cases of this disease are occasionally observed in all parts of the country. They are found more frequently and in greater number in low and marshy districts, near lakes, mill-ponds, swamps, &c. The most respectable physicians in the country so universally concur in this observation, that it would be unreasonable to contest the fact.

In some of the more exposed situations, and after very hot and damp summers, the yellow fever often assumes an epidemic appearance in the country. The malignant disease at Catskill in this State, in the year 1803, (see *Medical Repository*, vol. 8, page 105) affords an instance of this kind. In the year 1793, it prevailed in many

parts of the country in the eastern, middle and southern States, where no suspicion of contagion could exist.

The venerable Dr. ANTHON, of this city, whose accurate acquaintance with the pestilential epidemics of New-York enables him to decide in the most satisfactory manner, assures me he has often seen the same disease in the interior country, and particularly in the low situations near the river *Illinois*, after an extensive inundation of that river, succeeded by hot weather.

Mr. VOLNEY found yellow fever in several parts of the interior western country, during his travels in America, and describes the disease with so much accuracy and force, that no doubt of his testimony can be entertained.

See his View of the Climate and Soil of the United States.

Out of a great mass of particular instances of the appearances of yellow fever in situations inaccessible to foreign contagion, I shall only now select the following:

Extract from Mr. Andrew Ellicott's Voyage down the River Ohio, in the month of November, 1796.

"*November* 15*th.*

"Arrived at Galliopolis about 11 o'clock in the

morning.—This village is a few miles below the mouth of the Great Kanhaway, on the west side of the Ohio river, and situated on a high bank; it is inhabited by a number of miserable French families. Many of the inhabitants, this season, fell victims to the yellow fever. The mortal cases were generally attended with the black vomiting. This disorder certainly originated in the town, and, in all probability, from the filthiness of the inhabitants, added to an unusual quantity of animal and vegetable putrefaction in a number of small ponds and marshes within the village.

"The fever could not have been taken there from the Atlantic States, as my boat was the first that descended the river after the fall of the waters in the spring: neither could it have been taken from New-Orleans, as there is no communication, at that season of the year, up the river, from the latter to the former of those places: moreover, the distance is so great, that a boat would not have time to ascend the river, after the disorder appeared that year in New-Orleans, before the winter would set in."

See Ellicott's Journal.

The following fact is communicated by Dr. Watkins, from his personal knowledge.

There is a village called *New-Design*, about fifteen miles from the Mississippi, and twenty

miles from St. Louis, containing about forty houses and two hundred souls. It is on high ground, but surrounded by ponds. In 1797, the yellow fever carried off fifty-seven of the inhabitants, or more than a fourth. No person had arrived at that village from any part of the country where this fever had prevailed, for more than twelve months preceding. Our informant resided in the village at the time; and, having seen the disease in Philadelphia, he declares it to be the same that prevailed at New-Design. He also mentions an Indian village depopulated by the same disease two or three years before.

See Medical Repository, vol. 4, page 74.

Fever, with black vomiting, in the middle part of Pennsylvania, west of the Susquehannah.

"The fever which prevailed, in the autumn and winter of 1799, in Nittany and Bald-Eagle Valley, in Mifflin county, Pennsylvania, proved, in a number of cases, mortal. Bald-Eagle Valley, situated about 200 miles N. N. W. of Philadelphia, is low, abounding with much stagnated water in ponds, which, from the dryness of the season, became very putrid and offensive to the smell. Near to these waters the fever prevailed with great malignity. It was ushered in by chills, with pains in the back, limbs and head, which, in 48 or 60 hours carried off the patients.—They

discharged vast quantities of filth from the stomach, of the consistence and appearance of coffee-grounds, so offensive in smell as to produce nausea, and even vomiting, in the attendants. The fæces also had the same appearance. In many the disease terminated by profuse discharges of blood from the anus and vagina.

Ibid. page 75.

On Dr. Chisholm's *singular opinions concerning Yellow Fever.*

It is well known that this gentleman contends for the production of a *new* and *peculiar pestilential disease*, which he supposes to have been imported by the *ship Hankey*, in the year 1793, from Boullam, on the coast of Africa.* He believes this new distemper to have been spread through the West-India islands and transmitted to this country. He admits that the yellow fever of the West-Indies is not a contagious disease. The importers and contagionists in the United States, assuming his opinion, and fortifying themselves by his authority, assert that our epidemics are not the yellow fever of the West-Indies, but a continuation of the new and peculiar Boullam fever.

* An Essay on the Malignant Pestilential Fever, &c. 2d Edit. in 2 vols.

But the slightest examination of the subject is sufficient to satisfy an impartial inquirer, that the Boullam fever of Dr. Chisholm and the yellow fever of the West-Indies, are precisely the same disease ; and that only such occasional variations of grade have been observed in it, as are found in the different epidemic seasons of all pestilential distempers. The ravages of pestilence in the West-Indies, since the pretended introduction of the Boullam disease, among a given number of Europeans, or other strangers recently arrived, or among the natives themselves, are not greater than they were fifty years ago, or during the war of the American Revolution. The great body of physicians and people in the West-Indies, do not find the fever now prevailing at all different from what it was many years before the arrival of the ship Hankey from Boullam. The descriptions of the disease by physicians who wrote forty, fifty and sixty years ago, precisely agree with what is now observed in those islands and on this continent. And in this city, the yellow fever prevailed in the autumn of 1791, two years before the supposed arrival of the Boullam disease by the ship Hankey.

Without recurring, however, to facts of this kind, Dr. Chisholm's doctrine, considered in itself, cannot stand the test of examination. All his leading assertions concerning the pretended introduction of the Boullam fever into the West-

Indies, are positively denied by Mr. Paiba, a gentleman of intelligence and unblemished character, who was on board of the ship charged with the importation, during the whole of the voyage. The narrative itself of the voyage, and of the disease supposed to have been imported, betrays inherent evidence of mistake. And even if Dr. Chisholm's story be admitted, it is only an instance of malignant disease generated in a vessel, as he does not pretend to derive it from the Africans.

Dr. Chisholm makes a very elaborate attempt to discriminate the features of the Boullam fever from those of the yellow fever of the West-Indies. It is apparent that there is no foundation for the distinction; and that he only describes different grades of the same disease, modified and rendered more malignant at one time than another, by peculiarities of season. This happens with respect to all epidemic diseases. The measles, for example, in one season, are *mild and safe*, at another, they are *malignant and fatal;* in one epidemic they are *highly inflammatory*, in another they may be *highly putrid;* yet are they not essentially the same disease? But, admitting, for argument's sake, the distinction contended for by Dr. C. it may be still asserted that, in his description of the ordinary yellow fever of the West-Indies, and not in that of the Boullam fever, he gives the character of the disease which has so often prevailed in this city.

It is creditable to the candour of Dr. Chisholm that he seems lately, in a considerable degree, at least in effect, to have given up his favourite opinion. He now admits that a disease, similar to that of Boullam, has been since generated on board of a filthy ship from England. It is proper to give his own words, as expressed in an extract of a letter to Dr. Davidson, dated Demarara, August 10, 1800, a period of seven years after the formation of his first opinion.

" A fever of a most alarming nature has most fatally prevailed since the beginning of July. I have visited a few of the sick at the request of Doctors Dunkin and Lloyd in town, and of Dr. Ord on this coast; and I have no hesitation in pronouncing it a fever of infection. Its features are, almost without exception, precisely those of the malignant pestilential fever of Grenada of 1793 and 1794. It is fully as fatal, as rapid, and as insidious. Its origin, as far as it has been ascertained by the gentlemen I have mentioned, seems to be similar. A ship arrived about the beginning of July or end of June from Liverpool, after touching at Surrinam. The filth on board, occasioned by a cargo of horses, and the extreme neglect of the officers and crew, was such as beggars description."

See Medical Repository, vol. 5, page 229.

These facts, thus presented by Dr. Chisholm himself, form a luminous and instructive commentary on his former opinion, which he had published with great confidence, and which has been implicitly adopted and acted on by the contagionists in the United States. In 1793, he pronounced the malignant disease of Grenada, which, as was observed before, he believed to have been imported from the coast of Africa, a "*nova pestis*," a peculiar, original, foreign pestilence, recently generated and utterly unknown before, endued with a new and distinct character, possessing new powers of devastation, and capable of propagating itself by contagion throughout the world. As he considered it to have been engendered on board of the Hankey, in consequence of the accumulation of filth, the crowding of a great number of persons within a small space, and the heat of the atmosphere in which the vessel was immersed; he must have ascribed whatever peculiarity he supposed it to possess, to the peculiar state of the air on the coast of Africa; for he did not pretend to derive it originally from the inhabitants of Africa, or any modification of contagion. No other circumstance of the case, therefore, except some unknown singularity of the African atmosphere, could occasion this alleged instance of the generation of pestilence in a ship to differ from other cases in which malignant fevers are produced in filthy,

crowded and unventilated vessels, in hot climates or during hot seasons. But in the year 1800, while the flames of the Boullam disease lighted up in 1793, were still raging far and wide, and destroying the people of the West-Indies and of the American continent, he finds another "*nova pestis*," generated in a ship from England, which had touched at Surrinam, and had become very filthy from a cargo of horses ; and what is wonderful, he finds this pestilence, thus originating in a ship from England, possessing *features, almost without exception, precisely those of the malignant, pestilential fever of Grenada, of* 1793 *and* 1794 ; *fully as fatal, as rapid, and as insidious.*—It appears then that the facts advanced by Dr. C. in the latter case (even admitting those concerning the Hankey to be true) instead of supporting his doctrine of *novelty and peculiarity in the fever of Boullam*, go too far for his purpose, and establish the general principle, that filthy, crowded, and unventilated vessels, immersed in a certain degree of heat and dampness, may generate malignant fever in all parts of the world where such circumstances are found,—which is precisely the principle for which the advocates of local and domestic origin have always contended.

As to Dr. C.'s opinion of the contagiousness of these fevers, it rests upon the same vague and delusive foundation with the popular, or rather

vulgar inference of contagion, in all cases where a disease attacks a great number of persons in the same vicinity ; which has been sufficiently refuted in a former part of this Report.

SOME

REMARKS

ON

THE IMPORTANCE OF THE STOMACH

AS A

CENTRE OF ASSOCIATION,

A SEAT OF MORBID DERANGEMENT,

AND A MEDIUM

OF THE

OPERATION OF REMEDIES

IN

MALIGNANT

DISEASES.

TO

BENJAMIN MOSELEY, M. D. &c.

LONDON.

SIR,

I HAD long known that my late Brother considered himself as extremely fortunate in having established an epistolary intercourse with the Author of the celebrated work on "*Tropical Diseases;*" and that he cherished that intercourse with peculiar interest.

It was not, however, until after his lamented decease, that I had an opportunity of examining such portions of his foreign correspondence as he had preserved. Of these I found the letters from Yourself among the most numerous. Nor was their *number* the only circumstance which attracted my attention. The urbanity and friendliness of their style; the respect which they manifested for my Country, and for its literature and science; and the liberal zeal for the promotion of general knowledge, and especially for the improvement of Medicine, which they every where expressed, could not fail to afford me high gratification, not only as a Brother, but also as an American, and a friend to human happiness.

Permit me, Sir, by prefixing your Name to the following Essay, to discharge, as far as I am able, a debt on behalf of the Dead, and to testify the respect and gratitude with which I am,

Your obedient Servant,

THE EDITOR.

Princeton, New-Jersey,
January 3d, 1814.

SOME REMARKS, &c.

IN a former paper I undertook to lay before the public some "*Cursory Observations on that Form of Pestilence called Yellow Fever.*" In an attempt to pursue the analogy between febrile miasmata and poisons, I endeavoured to prove that the former are commonly received into the stomach by the swallowing of saliva in which they had been lodged; and that by coming in contact with its internal surface, they produce the affections of that organ and of the upper intestines, which are frequently indicated by the symptoms of yellow fever, and afterwards, in fatal cases, laid open to view by dissection.

The phenomena of hydrophobia, and particularly those of two cases which occurred in this city, and are related at p. 73 and 75 of the Medical

Repository, vol. 5th, have induced a change of my opinion as to the mode of operation of febrile miasmata on the stomach, and a conviction of the necessity of referring many such appearances of derangement in that organ to the influence of a law of animal nature, which seems to bear a very interesting relation to the theory, prevention and treatment of malignant fevers. To correct the mistake; to state what now appears to be a more accurate view of the subject; and to point out some of the important and practical consequences which are supposed to result from this opinion, are the objects of this paper.

The cases of hydrophobia just referred to, presented complete examples of malignant fever. The mode of accession; the febrile symptoms; the progressive extension of disease from a few to many parts of the system, till at length all the important organs were deeply involved; the gradual and uninterrupted exhaustion of the principle of life, and the period of the fatal termination, all corresponded exactly to this character. The vomiting of black matter* in one instance, and the yel-

* I am aware that this symptom may be ascribed, at the first view, to the large and frequent doses of tincture of cantharides prescribed in that case. The short space of time, however, in which the black vomiting came on after the first doses, and the total absence of all signs of the more usual effects of that agent on the system, compel me to reject the opinion.

lowness of the skin in the other, after death, were

But admitting, for argument's sake, that this instance of black vomiting and of disorganization of the stomach, was the consequence of using the remedy in question; it is well known that the vomiting of similar matter, as well as unequivocal appearances of inflammation and derangement of the stomach after death, are frequently observed in cases of hydrophobia.

Mr. John Hunter informs us, that in the examination of the bodies of those who have died of hydrophobia, "an appearance has, in general, been seen on the inner coats of the stomach, near the cardia, similar to what is found in the bodies of persons who have had slight inflammation, that is, a greater number of red vessels with small streaks of red blood. In some instances there has been an increased vascularity of the *pia mater*, or slight watery effusion on the surface of the brain. In some dogs that died of the disease, the appearances upon the inside of the stomach were similar to what have been already described; but there was no unusual fulness discovered in the vessels of the brain, or its membranes."—*Transactions of the Society for the Improvement of Medical and Chirurgical Knowledge*, vol. i, page 311.

Dr. Baillie observes (Morbid Anatomy, p. 68,) that "in opening the bodies of persons who have died from hydrophobia, the inner membrane of the stomach is frequently found inflamed at the cardia and its great end."

Authorities in proof of this condition of the stomach, found after death from hydrophobia, might, if it were necessary, be multiplied to any extent. Many likewise might be adduced of the discharge of a dark coloured matter, by vomiting, towards the close of that disease, and where nothing had been taken which was calculated to induce inflammation and its consequences.

sufficient to impress the minds of all who had been accustomed to see that form of malignant disease which has so often prevailed in the cities of the United States for the last ten years.

The analogies between hydrophobia and malignant fever have been so ably exhibited by Dr. Rush,* that it is unnecessary for the present purpose further to prosecute that subject. Of the various points of similarity between them, which he endeavours to establish by a recurrence to facts, none seems to be more important and convincing than the condition of the stomach and other portions of the alimentary canal, as well as of several other viscera, when laid open to inspection by the dissection of bodies dead of these diseases. If the poison of a mad dog producing hydrophobia were to gain admittance into the body through the alimentary canal, as is supposed, with great probability, in respect of febrile miasmata, the similar disorganization of that canal, and especially of the stomach and duodenum, to what is discovered by dissection, after cases of malignant fever, would not so pointedly demand attention nor offer instruction. Every person would explain the appearances by referring them to the primary operation of a poison coming in contact with this irritable surface. But when we find effects so exactly

* Medical Inquiries and Observations, vol. v, p. 211.

similar arising from different kinds of noxious matter, conveyed into the system by different passages, one of which is known to be often at a great distance from the parts which exhibit this morbid derangement after death; will it not follow that such parts possess, in an extraordinary degree, the property of attracting and fixing disease in themselves, with the effect of diffusing it afterwards, as will be presently seen, to other parts of the body?

This wonderful property is possessed by the stomach, and some other portions of the alimentary canal, in a degree much beyond the other parts of the body. The importance of the stomach to animal life may be inferred from its being much more universally found in the structure of animals than the brain, heart and lungs, and from the deprivation of it being much more universally and speedily fatal than that of any, or all of those vital viscera. In a state of health, the functions of the stomach, as the principal organ of assimilation, will give it a high rank among the parts of the system which support life. But it is in diseases that its principal powers and relations are unfolded to view. In fevers it is probably, in most instances, the first part affected, as it commonly affords the first notices of the approaching mischief. From its susceptibility of morbid action by noxious powers applied immediately to its surface, or to distant parts of the body with which it maintains

sympathetic connection, it becomes not only the introducer of such action to the vital organs, but a centre of association, and an index of the most interesting circumstances concerning the accession, progress, remission, crisis and cure of diseases. The extreme mobility of this viscus would be more generally felt if it were not for that unconsciousness of irritations in it which nature has ordained. Even mustard, pepper, salt, and other acrid substances, taken into the stomach, produce no sensations except a pleasant warmth, unless the large quantity of them lead to sickness and vomiting.

No part of the system possesses so wide a range of sympathy as the stomach. The phenomena of diseases demonstrate every day its connection with the heart and arteries, the brain, the lungs, the skin, the kidneys, the uterus, &c.—The due understanding and recollection of these sympathies is not only of great importance in detecting the seats, causes and nature of diseases, but quite as much so in directing the means of cure.

In consequence of this centrality of association and sympathy, the stomach is subjected to peculiar degrees of injury and derangement by diseases. It may be safely affirmed, that no part of the body is so liable to disorganization by malignant fevers as the alimentary canal, and especially

the stomach and duodenum. Morbid dissections so generally afford proof of this, that it would be improper to detain the reader by a recital of particulars.

Such considerations as these, in addition to a great many others, seem fully to support the doctrine that fever is principally a disease of association, and to prove that the sympathetic theory of it is better adapted than any hitherto known, to explain the various phenomena, and to point out the most appropriate and efficacious modes of treatment. It affords strong confirmation of this doctrine, that the stomach, the most associable part of the system, is the first and principal sufferer from the noxious causes which produce fevers; and that afterwards, in succession, the organs possessing the closest sympathetic relation to the stomach, such as the heart and arteries, the brain, the lungs, the skin, &c. are, precisely in the order of their sympathy, the most exposed to be involved in this morbid connection.

The mistake referred to above, in my paper concerning yellow fever, consisted in adopting the opinion, that the gastric affection in that disease ought to be attributed to the primary and immediate action of the febrile poison, swallowed with the saliva, upon the inner surface of the stomach and duodenum. This was undoubtedly a

hasty and incorrect view of the subject. The phenomena of hydrophobia, one of the most exquisite and deadly forms of malignant fever, afford ample means of correction. In this disease, the virus received on any part of the external surface of the body, at the most distant point of the upper or lower extremities, after laying dormant awhile, like the miasmata of fevers, though generally for a longer time, excites the stomach into violent morbid action, and then, successively, all the important and vital parts of the system. The manner and degree in which this morbid action disorganizes the texture of the stomach, and occasionally of the brain and other organs, may be learned from the dissection of bodies which have died of hydrophobia, as completely as in cases of other diseases commonly called malignant fevers.

So far as hydrophobia from canine poison may be conceived to be of the nature of malignant fever, the distinction between the consequences of the primary and secondary modes of affecting the stomach by febrile poisons is either weakened, or falls entirely to the ground. Dr. Darwin, whose theory of fever will remain an everlasting monument of his penetration and the comprehensiveness of his views, relies on that distinction to explain the difference between the mild and confluent small-pox. Thus he supposes, "that in the distinct small-pox the stomach is affected secondarily

by sympathy with the infected tonsils or inoculated arm; but that in the confluent small-pox the stomach is affected primarily, as well as the tonsils, by contagious matter mixed with the saliva and swallowed." With all possible deference for such authority, it seems to be difficult to admit this doctrine without many exceptions. There can be no doubt that the inoculated small-pox sometimes proves to be confluent, where no suspicion can exist of contagious matter being admitted into the stomach, and primarily or immediately affecting that organ. Would not Dr. Darwin have been nearer the truth if he had contended that the force of morbid action, which is sympathetically conveyed from the inoculated part to the stomach, and thence extended, by association, to other parts of the system, may, according to constitutional and other circumstances, be sufficiently diversified to produce all the varieties of the distinct and confluent disease?

The phenomena of hydrophobia from canine poison, of the diseases produced by the bites of certain serpents, and of confluent small-pox when it happens to be the consequence of inoculation (all which may be regarded as so many instances of malignant fever,) serve thus to show, in a convincing light, the wonderful mobility and associability of the stomach, as well as of the other vital organs with which it is especially connected by

sympathy, and thereby to lay a broad foundation for the sympathetic theory of fever.

The doctrine of fever, therefore, which appears to be most consistent with the phenomena, so far as they hitherto have been observed, is this:—Certain noxious powers, called miasmata, contagions and poisons, find admittance into the system through the mouth and nose, or the pores of the skin, or they are inserted by the bite of a rabid or venomous animal. Whether miasmata and contagions, entering by the mouth, exert their action chiefly on the lungs or stomach, cannot yet be certainly decided. It is not improbable that differences in the ensuing disease may often arise from the various degrees of susceptibility in the several organs which give reception to the noxious matter. But whatever be the mode or place of entrance, the noxious matter, after a longer or shorter time, excites the system to a state of action which is morbid both in kind and degree. The stomach, the most moveable and associable of all the organs of the animal body, is the first to experience this excitement in itself—the most adapted, from its extraordinary powers of sympathy, to extend it to other viscera—and the most liable to sustain the burthen of the disease, and to undergo the most fatal disorganization. To the heart and arteries, to the brain, to the lungs, to the skin, and occasionally to many other important

parts of the system, is this morbid excitement communicated by means of the associative influence of the stomach. Hence all the variety of congestion, inflammation, effusion, engorgement, gangrene, and other modes of derangement which dissection exhibits in the stomach, intestines, brain, lungs, and other viscera of such as die of malignant fevers.

If this view of the nature of febrile diseases be just, it will serve to direct the attention of the physician, in an especial manner, to certain objects respecting the prevention and treatment of them, which cannot be too studiously regarded.

Admitting that morbid action in febrile diseases is at first the result of a poison locally applied; that this action begins in certain organs, often primarily and chiefly in the stomach, not so much on account of the local reception of the poison there, as because that viscus possesses an extraordinary portion of susceptibility of excitement; that this action, so implanted in the stomach, the centre of association and sympathy, is gradually extended to other viscera with which it has principal sympathetic relations, such as the heart, brain, lungs, &c.; that this action must necessarily, in most cases, commence with a nascent feeble existence, and only by degrees acquire growth, strength and stability: that when once the force of habit is join-

ed to the original violence with which this action began, the means of subduing it will become every hour more precarious and difficult; and, finally, that this action of organs so tender and vital, if allowed to proceed, will often, in a few days, render the system unfit to sustain life, and produce those appearances of disorganization which dissection exhibits after death;—it follows, from a due consideration of these circumstances, that the first object of the physician should be to arrest this diseased action in the earliest hours of its formation, before a more extended operation, time and habit, shall have fixed its possessions of the system, and that he should regard all subsequent attempts as comparatively feeble and uncertain.

Although it is not my design to deliver any general account of the treatment of febrile diseases, it will not be improper to glance at some of the remedies whose application depends upon the principles which I have attempted to explain. In this view of the subject, the most direct methods of arresting febrile action are, 1st. To excite a new action subversive of the existing one in the organ originally and principally affected, and in such as are associated with it; and, 2dly. To divert morbid action from an important or vital part, by exciting a sufficient degree of it in some other part less essential to life.

As an example of the first class, it is proper to mention the efficacy of emetics at the commencement of febrile diseases, the use of which is sanctioned by immemorial experience. The evacuation they procure, though often confessedly important, constitutes but a small proportion of the advantage which is found to result. Sydenham perceived this effect with his usual sagacity, without thoroughly understanding the cause. "When I have happened," says he, "sometimes carefully to examine the matter thrown up by vomit, and found it neither considerable in bulk, nor of any remarkable bad quality, I have been surprized how it should happen that the patient has been so much relieved thereby; for as soon as the operation was over, the severe symptoms, viz. the nausea, anxiety, restlessness, deep sighing, blackness of the tongue, &c. usually abated and went off, so as to leave the remainder of the disease tolerable."* His annotator Wallis, properly remarks on this passage, that Sydenham "was not aware of the sympathetic affections which take place in the constitution, nor knew that an extremely small portion of morbid matter could produce effects so sudden and surprising, from local action, so as to derange the whole system." It will be apparent to every body, that this morbid action in the stomach, whether primarily or sympathetically excited,

* Works, vol. i, p. 34 of Wallis's edition.

while yet only beginning, must be comparatively unsettled and undetermined in its operation; and that this offers the golden opportunity, perhaps never to return, of creating a different and more healthy action by means of emetics, and thereby of rescuing the patient from the danger which awaits him. And at the same time it will be equally apparent, that if emetics be exhibited after certain degrees of morbid excitement shall have been actually formed and confirmed in the stomach, that they will not only be entirely incompetent to dislodge the disease, but will aid and hasten that disorganizing process which renders the system incapable of life.

Sudorifics may be properly taken as an example of the remedies which operate by diverting morbid action from an important and vital to a less important part. It has been often supposed that they produce their beneficial effects by causing the discharge of certain noxious fluids, which, being retained in the system, would have caused a continuance of the febrile commotion. This opinion is opposed by a number of difficulties, which it seems impossible to remove or surmount. On the contrary, the referring of the efficacy of sudorifics to a revulsion of excitement from internal organs to the skin, is conformable to known laws of the animal economy, and supported by facts which fall under daily observation.

The plan of curing diseases by transfer or revulsion of excitement from one part of the system, and fixing it in another, includes a great proportion of our most powerful remedies, and opens a wide field of future discovery and improvement. The effects of mercury in producing ptyalism—of blisters in inflaming and vesicating the skin, and exciting a strangury, of sinapisms, other rubefacients, and of many other articles operating on similar principles, afford examples of this revulsion of excitement. Though it is not requisite that these remedies should be always employed, like emetics, in the forming stage of the disease, it is certainly expedient to bring many of them early into use. This is particularly the case with mercury. According to the principles of association, febrile action will be more easily subdued in its earlier than more advanced stages; hence the mercurial disease will be efficacious in destroying the original one, in proportion to the expedition with which it is excited. It is probable, likewise, that the mercurial action will be more readily introduced in the beginning of the disease, when morbid sympathies are few, and feebly catenated, than at a later period, when all the important viscera are labouring under excess of stimulus, and when time and habit have confirmed the strength of the noxious association. Some degree of this reasoning will, doubtless, be applicable to all the articles which belong to this head. In the case now un-

der consideration, the causes of diseases, and the remedies for them, operate on the system upon the same principle. It is by excessively concentrating excitement in certain organs, and by robbing others of their due share, that such noxious powers induce disease. By pursuing an analogous course, and soliciting excitement back again from the diseased parts, in order to fix it in others less essential to life, the physician (differing chiefly from the morbid cause in the parts to which he applies the stimulating agent) imitates the procedure of those noxious principles which are most inimical to life.

The doctrine of the leading agency of the stomach in the establishment and extension of the morbid motions called febrile, satisfactorily explains the effects of emotions of the mind, and especially of terror, in bringing on diseases, and imparting to them a malignant character. Whatever weakens the stomach will expose it to the attack of febrile poison. No part of the body exhibits more intimate connection with the mind than that organ. No other part has its functions so immediately affected by mental emotions, as is often observed in the sudden loss of appetite and suspension of digestion by the arrival of joyful or afflicting intelligence. The consequences of this close connection are often pernicious in the seasons of mortal epidemics. Every individual,

at such times, must be presumed to be more or less under the influence of the reigning noxious power. Terror is apt to start up and assail the mind from trifling as well as substantial causes of apprehension. The stomach being, as has been seen, the chief recipient and propagator of morbid action, and this morbid action being most likely to intrude and fix itself when that viscus, from any cause, is deprived of its accustomed tone; it clearly results that terror may operate in seasons of malignant epidemics as a powerful and destructive exciting cause. Experience and observation confirm the opinion suggested by reasoning. It is often popularly remarked, that such as are most fearful of malignant diseases are most apt to be attacked by them. There can be no doubt that this opinion is founded on fact. Many of the vague and mistaken accounts of the propagation of malignant diseases by contagion, admit of an easy explanation on this ground. A system impregnated with the prevailing virus, but capable of sustaining it, without injury, so long as the equilibrium of excitement can be exactly preserved in the several parts of the body, may be supposed to be suddenly struck with terror at the sight of some frightful spectacle, or at the recital of some alarming story. What will be the consequence? The well-adjusted balance of excitement is immediately lost; the stomach, deprived of its tone by mental agitation, is left a prey to the insidious destroyer

which had been long lying in wait for such an opportunity of intruding. This principle will go far in explaining many pretended facts concerning the contagiousness of Asiatic plague and the yellow fever. It is asserted that contact is the surest mode of communicating the contagion of the plague. It may be said, with equal truth, that contact is the surest mode of exciting terror in the person exposed to that kind of intercourse. If the apprehension of contagion floating in the atmosphere, and casually applied to the bodies of men, be a source of alarm, what must be the consternation of such as believe themselves to receive immediately from the persons of the sick, the undiluted infection they so much dread? It is well known that persons who have imbibed the poison of pestilential epidemics often escape injury, until exposure to cold or fatigue, the effects of intemperance, indigestion, &c. coming in aid of that poison, suddenly induce the disease. There is good reason to rank terror among the most potent of such occasional causes. Among an ignorant and superstitious people, the danger of actual contact will naturally be much more highly rated than that of any species of poisonous articles diffused in the air. This impression will be strengthened by the recollection of several diseases communicable by contact, but not by effluvia. And it is probable that a mortal epidemic, by filling the minds of the weak with frightful impressions, especially when

these impressions are heightened by an accidental contact of the sick, is rendered much more destructive to the community through the associative operation of fear, which thus, under the mask of contagion, exerts a fatal influence on the system, through the medium of the stomach. All the resignation that fatalism can boast, in Mahometan countries, is insufficient to shield the mind, and the group of vital organs connected with it by sympathy, from the ravages of terror and despair.

The noxiousness of terror seems to admit of illustration from the effects of intemperance in debilitating the stomach, and thereby inviting the attack of febrile action. The observation is familiar to every person, that the invasion of malignant diseases is more frequent and violent after a fit of drunkenness. That the stomach is, in this case, the first and principal sufferer, will not be denied. But the condition of this organ is not rendered much more unfit for the performance of its functions by a debauch, than by the overwhelming operation of terror.

The use of mild corroborant remedies, during the prevalence of malignant epidemics, for the purpose of securing the system against the approach of febrile action, by supporting the powers of the stomach, is strongly enjoined by the view which is here presented of the functions and irritability

of that organ. The efficacy of such remedies is also established on the ground of experience. The daily use of a small quantity of Peruvian bark to fortify the stomach, and, through the medium of that, the whole system, against the fevers of tropical regions, has preserved multitudes from the attack which otherwise awaited them. Is is believed that no instance of the failure of it, if properly taken and continued, stands upon record.

The sympathetic theory of fever affords the easiest solution of the problem of its spontaneous cure. The healthy action and associations of the several organs of the body are more natural, powerful and durable, than such as are morbid, and, of consequence, have an incessant tendency to recur, and regain their force whenever the excitement of the disease proves too feeble to disorganize, or extinguish the life of the affected parts.

The same theory satisfactorily explains the cure of diseases by a great variety of different, and often opposite remedies. If evacuants be employed, the sympathetic relations of all the important organs to one another will frequently, in milder cases, render it almost a matter of indifference whether this or the other mode of evacuation shall have been preferred. And it is equally plain, that to excite a new action in any part, subversive of the existing morbid one, or to produce a revulsion of

excitement from an organ of importance to another less essential to life, an hundred different remedies may be used without leading to any material variation in the result. Still, however, it should be always remembered, that there is a highest grade in the appropriateness of the selection, as well as in the efficacy of remedies, which the enlightened physician will incessantly endeavour to approach.

An attention to the condition of the stomach has been always known to physicians as a leading part of their duty in the treatment of malignant diseases. The reason and necessity of this will more fully appear if it be granted, as has been attempted to be shown, that this organ, from its peculiar and unequalled susceptibility, is the chief introducer and propagator of febrile action, the most apt to become the subject of its disorganizing violence, and, as a medium of the operation of remedies, its most powerful counter-agent and destroyer. And hence it will be obvious that the proper management of this noble organ, and of its band of noble associates in sympathy, is of primary, essential, and decisive importance, in the prevention and treatment of malignant fevers.

AN

ATTEMPT

TO DEDUCE A

NOMENCLATURE

OF CERTAIN

FEBRILE AND PESTILENTIAL DISEASES

FROM

THE ORIGIN AND NATURE

OF THEIR

REMOTE CAUSE.

TO

JOHN WARREN, M. D.

PROFESSOR OF ANATOMY, IN THE UNIVERSITY OF CAMBRIDGE, MASSACHUSETTS.

DEAR SIR,

THE obligation of my Family to You is of long standing. More than thirty-six years ago, when my eldest Brother fell a sacrifice to exposures and hardships encountered in the service of his Country, he enjoyed all the tender assiduities of your friendship; expired in your arms; and was honoured by You in his death.

Be not surprised that the remembrance of such a fact, gratefully cherished, should suggest, in collecting the writings of a younger Brother, of the same Family and Profession, the propriety of inscribing some production of his pen to You. Had it been possible to consult Him on the subject, his affectionate veneration for the name of WARREN, would have more than sanctioned the choice which led to this public testimony of respect and gratitude.

That You may long continue to adorn your Profession, to enlighten the students of the Healing Art, and to bless your Country; and at the close of a life equally useful and happy, may be graciously received to that world, in which the glimmerings of human science, shall be lost in the radiance of Unbounded Knowledge, and the feeble exertions of philanthropy give place to the unfettered activity of perfect and eternal benevolence, is the ardent prayer of,

My dear Sir,
Your grateful friend and servant,

THE EDITOR.

Princeton, N. J.
Jan. 20, 1814.

AN ATTEMPT, &c.

THERE is a group of diseases related to one another by obvious affinities, and essentially differing from all others, which do not appear to have been hitherto discriminated with sufficient distinctness in any arrangement of Nosology. It is not easy to determine precisely the whole number that ought to be admitted into this natural assemblage. The Oriental Plague, the Yellow Fever of America, with all the subordinate grades of Remittents and Intermittents, and the several varieties of Typhus, are those which exhibit the most intimate relations. Dysentery, and some other distempers of warm climates and seasons, which are apt to become epidemic, certainly deserve to stand in the same association. All these, as they are supposed to be the effect of a common principle, somewhat

modified, which is properly called *Miasma*, or the effluvium of dead animal and vegetable substances undergoing decomposition, may be denominated *Miasmatic Diseases.*

Miasmatic Diseases fill an immense space in the history of the epidemic and pestilential distempers which have always been the scourge of the human race. From their peculiar origin and causes; from their influence on commerce; from their effects on the hospitable and liberal intercourse of nations; from the improvements which might be made by communities and individuals towards preventing and mitigating the prevalence of them, and on a variety of other accounts, they deserve to be considered separately from all other distempers, and as not only interesting as a distinct whole, but likewise as made up of various species, possessing different characters, qualities and degrees, which are well worthy of being analyzed, distinguished, and minutely discussed.

The nomenclature of these diseases ought to embrace the leading facts belonging to the subject, and divide and arrange them in a natural method. This does not appear to have been sufficiently done in any of the systems of Nosology which are now before the public; and considering the declining credit of such modes of arranging diseases, the defect is not likely to be soon supplied. It

would be inconsistent with the design and limits of these remarks to inquire generally into the merits of Nosology. While the advantages of it in some respects cannot be denied, it must be granted, on the other hand, that it is liable to much abuse, and too often leads such as confide in it to content themselves with a parade of terms instead of substantial knowledge. To inquire into the comparative merits of the various plans of Nosology hitherto published, would open a field still wider, on which it is not intended now to enter. The causes, seats, and especially the symptoms of diseases, have been taken by the different writers as the foundation of arrangement. Sauvages and Cullen, and most of the other nosologists, endeavour to discriminate diseases by their symptoms, and labour with great attention to distinguish such as are merely accidental, or concomitant, from those which are essential and inseparable.

It has been generally supposed that the science of Medicine is yet too imperfect to admit of the erecting of a system of nosology on the causes of diseases. The author of Zoonomia, with that boldness and force of mind which distinguish most of his researches, has ventured to take the proximate cause as the ground of his classic character. He contends that this mode of discrimination is better adapted than any other, to enable physicians

distinctly to understand the nature of diseases by a comparison of their essential properties, to facilitate the knowledge of the modes of treatment, and to discover the nature and proper denomination of any disease previously unknown.

Instead of the proximate, the remote cause is resorted to in this attempt to assign a distinct character to the assemblage of diseases now under consideration.* It is not expected that the new terms which are here to be proposed, will be received into professional or popular use, or, indeed, that they will be well suited to that purpose. The object of proposing them is chiefly to produce a clear and distinct impression of that doctrine concerning the origin, nature and relations of the dis-

* Dr. Cullen admits the propriety of sometimes discriminating diseases by a reference to their remote cause in the following words: "Principii quædam similitudo, morborum inde in diversis hominibus genitorum similitudinem arguit; ita, quando morbi diversorum hominum, ex uno eodemque principio oriantur; quando, etiam principium illud, ad morbum gignendum, in unoquoque necessarium sit; denique, quando idem principium, ubique fere ejusdem qualitatis et vis esse videatur, tum demum morbos, ex ejusmodi principio genitos, ejusdem vel simillimæ naturæ esse, judicare licet."—*Vide Synops. Nosolog. Method.* p. 194.

In conformity to this, in his character of *Intermittentes*, he describes them, "*Febres, miasmate paludum ortæ*," &c.—Ibid. p. 204.

eases in question, which has been long maintained in this work, and yet by many seems to have been greatly misunderstood. Through the medium of new language, it is possible some additional light may be shed on this intricate subject. If the remote cause of Miasmatic diseases had been correctly understood, much of their prevalence and ravages might have been spared, and much of the zeal and learning wasted in controversy about the mode of their introduction, would have been devoted to the more substantial objects of ascertaining their nature and treatment.

It is probable the truth on this subject would long since have universally predominated, if the doctrine of the contagiousness of Miasmatic diseases, and their exportation and importation from one region of the globe to another, had not been so precipitately adopted. There is scarcely any thing in the history of medical opinions which deserves to be more regretted, which has done so much to retard the progress of improvement, or to close mens' eyes against the light of truth. Under the influence of this error, the knowledge of febrile diseases, for a long period, was either stationary or retrograde. No reference to contagion is to be found in the works of Hippocrates, Celsus, Aretæus or Trallian.* These venerable

* This is affirmed on the authority of Dr. Blane (see his *Observations on the Diseases of Seamen*, p. 217.) as well as

observers of nature saw much of pestilential epidemics; but they saw nothing of contagion, or of the introduction of such diseases by importation from abroad. From the writings of Galen it may be perceived that, amidst a multitude of other speculative notions, he believed in febrile contagion. From him it passed down with the herd of copyists and interpreters of his opinions to the time of Fracastorius, who reduced the doctrine to a more systematic form, and contributed much to its currency and authority. In this state it descended to the time of Dr. Mead, who may be regarded as the great modern advocate of contagion, whose learning and professional eminence have done much to produce that confidence in the doctrine, which is still to be found in many parts of Europe.

The prejudices of Europe on this subject are rapidly losing their influence in America. Much of what was formerly ascribed to contagion is now believed to arise from the miasma of putrefaction. Medical opinion, however, in this country, is still in some degree undetermined as to the limits of

my own examination of two of these writers, viz. Hippocrates and Celsus; the others not being within my reach. Celsus, who may be said to treat formally of the Plague, and gives a chapter of rules for escaping it, makes no mention of contagion; but assigns certain winds, that is, in effect, a certain degree of heat and moisture, as the cause of it.—*See Celsus De Medecina*, p. 40, 41.

Miasmatic diseases. Many who entertain no doubts with respect to the febrile epidemics of summer and autumn, and who do not hesitate to refer the pestilential distempers called Plague and Yellow Fever to the same source, are still unwilling to consider Typhus as coming under a similar denomination. The contagiousness of this latter disease is yet held by many respectable physicians, who long since denied the existence of that quality in Yellow Fever and Plague. It is one of the leading objects of this inquiry to ascertain the relation of Typhus to Yellow Fever and Plague, and to show that, with some peculiar modifications in the manner of production, it is truly to be ascribed to a similar miasmatic origin.

In order to maintain this opinion concerning the origin of Typhus, and to exhibit the grounds of the new nomenclature of Miasmatic diseases which is here to be proposed, it will be necessary to consider in detail the modes in which they are supposed to be severally produced.

The miasma which excites Yellow Fever and all the inferiour grades of disease termed Remittents and Intermittents, is emitted from dead animal and vegetable substances, immersed in a certain degree of moisture, and undergoing decomposition by means of solar heat. Hence these diseases are found in the neighbourhood of low

and swampy grounds, known to abound in this kind of filth, and at that season when such filth is powerfully acted upon by heat; or they are found in large and crowded cities, where these pernicious substances are collected in large masses, and where the heat, from a variety of causes, rises much higher than in the adjacent country. In consequence of the quantity of these putrefying materials which overspread a swampy soil, or become accumulated within the area of a populous town, together with the high heat before mentioned, a large portion of the incumbent air is rendered noxious by this miasma, and a frequent result is epidemic disease. While the warm season continues to advance, and the filth remains in a condition to exhale this poison, sickness rages with increasing violence, acquires additional virulence and a more widely-spreading malignity. At length this miasma banishes or overpowers all other causes of disease within the range of its activity, usurps their places, and thereby forms what is called an epidemic constitution. This view of the subject is confirmed by the consequences of a reduced temperature. No sooner is the atmospheric heat diminished to the degree which is called cool weather, and especially to the degree of frost, than this evil, constantly dependant on heat for its origin and progress, begins to subside, and speedily vanishes. Solar heat, therefore, operating on masses of filth exposed to the open air, is the

principal agent in producing the miasma of Yellow Fever.

On the other hand, the miasma of Typhus, while it bears an obvious relation to that just described, exhibits also many important differences. Typhus is generally, and, it is believed, always originally, the pestilence of poverty, of low life, of crowded habitations, of personal and domestic filth. In the evolution of the miasma of Typhus, the matter of perspiration, and, generally, of all the excretions of the human body, constitutes the material, and animal warmth supplies the degree of heat necessary to prepare and set loose the poisonous gas. No large masses of animal and vegetable filth, exposed to the air and solar heat, are requisite to the creation of the typhous miasma; for it is diffused only a few feet from its source, and the general atmosphere of cities or neighbourhoods is never contaminated by it; but, in order to find it, we must examine the dress and persons, or the interior economy of the dwellings of the miserable beings by whose indigence, negligence and filthiness it is immediately generated. The excesses of solar heat are not wanted to ripen this destructive evil; for the heat of the human body, in contact with dress, bedding, furniture, &c. loaded with animal excretions, and rarely changed, washed or ventilated, is fully sufficient to account for the formation and evolution of this poison. Hence

the heat of summer, so far from being necessary to produce the miasma of Typhus, is altogether opposed to it, by inducing that freedom in the ventilation of houses, clothes, bedding and furniture, which, by diluting, destroys it in the germ. Typhus, therefore, is commonly a disease of cold climates or seasons, where the habitations of the poor and filthy are crowded and shut up, and where the exhalations from human excretions, acted upon by animal heat, are not dissipated nor diluted by the admission of fresh air.

If this view of the process of nature in the constitution of these febrile poisons be correct, it will not be deemed improper to attempt to distinguish and characterize them respectively by denominations which point to their several sources and modes of production, and thereby express their relations as well as their differences.

Assuming, therefore, the origin and modes of production of the two species of miasmatic poison which have been just described, they must be considered as gaseous fluids floating on the surfaces, or surrounding the bodies, from which they are respectively exhaled; and hence, like the ethereal fluids of magnetism and electricity, they may properly be called *miasmatic atmospheres*.

In order to distinguish these two *miasmatic at-*

mospheres, and, at the same time, duly to fix in the mind the impression of the origin and production of them, it is judged expedient to designate each by terms which will invariably express the process of nature in their formation. As the Greek language has been generally resorted to in the framing of scientific nomenclature, I shall employ the adjective ΚΟΙΝΟΣ, *common* or *public*, to denote one species of miasma, and ΙΔΙΟΣ, *personal* or *private*, to denote the other. The application of these terms will be readily understood. That portion of air charged with miasmata exhaled by solar heat from the surface of swampy grounds, or from masses of filth overspreading the open area of cities, according to this distinction, is denominated *Atmosphæra Koino-Miasmatica*. And that other small portion of air, contaminated by miasmata emitted from and surrounding the body, clothes, bedding and furniture of persons immersed in the filth of their own excretions, and of those associated in the same family with them, accumulated, long retained, and acted upon by animal heat, is denominated *Atmosphæra Idio-Miasmatica*. Or, in other words, the *Koino-miasmatic atmosphere* is that which is derived from a *common* or *public* mass of putrefying matter, expanded to the solar influence; while, on the contrary, the *Idio-miasmatic* is that derived from a *personal* or *private* source; being produced from the filth of individuals and their habitations, and

diffused around them only for a small distance. The former of these atmospheres seems to be appropriately termed *Koino-miasmatic;* because the pernicious materials which create it lie open to public view, and may properly be called *public nuisances;* are collected and suffered to become virulent by public remissness and negligence; form a noxious power which affects the whole adjacent community, and, compared with typhous miasma, is of considerable extent; and because they properly come under the notice of the magistracy or police, as being a source of public mischief. The latter of the atmospheres in question is properly called *Idio-miasmatic;* because the pernicious material from which it is derived, is made up of excretions from the bodies of individuals; is generally the result of personal uncleanliness and domestic filth; is, when compared with the former, diffused only to a very short distance from its source; and thus adhering to the bodies and clothes of individuals, or to the bedding and furniture of private houses, cannot so readily fall under the notice or cognizance of the public authority.*

* The febrile poison which is so frequently generated on board of ships, and thereby gives colour to the opinion of contagion and importation, is sometimes *Koino-miasmatic*, sometimes *Idio-Miasmatic*. Vessels abounding in vegetable and animal filth, and navigating the warm latitudes, or arriving in port during a hot season, will be apt to generate the former

The reader will observe that the denominations stated above have a principal respect to the source from which the putrid materials are derived, which, when acted upon by heat, emit the two kinds of miasmata. It occurred to me that, as solar heat chiefly operates in the one case, and animal heat in the other, the denominations might, perhaps, with equal propriety, be drawn from the respective sources of the caloric employed in the evolution of these miasmata. But further reflection induced me to adhere to the first impression. Solar heat, as one of the general blessings of the world, may be properly said to be *common* or *public;* and animal heat, belonging to the body in which it is evolved, may justly be considered in a *personal* or *individual* sense. The terms which have been selected are therefore still supposed to be sufficiently appropriate, whether respect be principally had to the quality and situation of the putrid materials, to the source of the heat, or to the extent of space in which the miasmata may be diffused.

If this view of the subject be correct, it will follow that the two kinds of febrile poison just described will produce corresponding kinds of fe-

species of miasma; while such as sail on long voyages, and are crowded with passengers, who neglect or are deprived of the means of cleanliness and ventilation, will be chiefly liable to produce the latter.

brile disease, one of which may be distinguished by the title of * *Pyrexia Koino-miasmatica*, the other by that of *Pyrexia Idio-miasmatica*. Under the former, as was said before, will be included the Oriental Plague, Yellow Fever, and all the inferior grades called Remittents and Intermittents; while under the latter will stand all the varieties of Typhus.

It would be a subject of curious and interesting inquiry, how far these different febrile poisons are susceptible of being blended, and thereby of producing effects of a mixed kind; and likewise how far the *Idio-miasmatic atmosphere*, by means of high solar heat and other concurring circumstances, is capable of conversion into the *Koino-miasmatic atmosphere*. Instances of the latter occurrence, it is believed, might be adduced, and satisfactorily substantiated.

If the account here given of the origin of these

* The word *Pyrexia* is here preferred to *Febris*, or *Fever*, first, for the sake of preserving uniformity of language in the choice of these terms; and, secondly, because *Febris*, as used by the nosologists, does not seem properly adapted to the purpose. Dr. Cullen gives the following character to his order of *Febres*: "Prægressis languore, lassitudine, et aliis debilitatis signis, *pyrexia, sine morbo locali primario.*" The existence of Fever, according to this description, *without a primary local affection*, appears to be doubtful, if not wholly improbable.

Miasmatic diseases should be found conformable to truth, it becomes easy to explain the fact of *Koino-miasmatic* epidemics being only observed in warm climates or seasons. We are hence also enabled to explain the reason of Typhus being chiefly a disease of temperate or cold climates, of its generally prevailing in the winter and other cold seasons, and of its appearing so seldom within the tropics. The heat of the human body, being the same in all climates and seasons of the year, must certainly act with more force on the long-retained excretions of the system, adhering to the skin, clothes, bedding and furniture of the indigent and filthy, shut up in their small, low, crowded, uncleanly and unventilated dwellings, in cold climates, or during the cold seasons of the year.

Many physicians, to whose opinions much respect is due, and who firmly hold the doctrine here stated concerning the *Koino-miasmatic* diseases, cannot be induced to give up the notion of the contagiousness of Typhus. As the decision of this question affects a doctrine of great importance, it appears to be justly entitled to attention. But, before entering on the question whether Typhus be a miasmatic or contagious disease, it will be necessary strictly to define what is here meant respectively by contagion and miasma. By contagion is understood a noxious matter, produced by organic action of diseased human bodies, emit-

ted from such bodies or from substances which have been in contact with them, and causing a similar disease in persons to whom it is applied. Of such contagion the small-pox presents the most unequivocal example. By miasma is meant that noxious vapour which emanates from dead animal and vegetable substances, or either of them, undergoing decomposition, and which is the spontaneous result of attractions and repulsions conferred by nature on the elementary particles of which it is composed. Contagion, therefore, is a poison of animal production, and miasma a poison of chemical production.

That the remote cause of Typhus is a miasma or chemical poison, and not a contagion, seems to be proved by its not depending on the disease itself for its origin, but being occasionally generated wherever the requisite circumstances happen to coincide. Dr. Cullen observes (First Lines, vol. i, p. 70,) "that the effluvia constantly arising from the living human body, if long retained in the same place, without being diffused in the atmosphere, acquire a singular virulence." And again (p. 71:) "It is probable that the contagion arising in this manner is not, like many other contagions, permanent and constantly existing; but that, in the circumstances mentioned, it is occasionally generated." Other authorities, if necessary, might be brought in support of this opinion.

This admission is greatly unfavourable, if not fatal, to the doctrine of the contagiousness of Typhus. The occasional generation of the disease *de novo* is proof of its arising without contagion; for contagion being a morbid secretion, cannot exist previously to the disease which engenders it; and if miasma, thus occasionally generated, can produce Typhus, why may not the same agent, by a continued and progressive generation, wherever the materials requisite to its formation exist, go on indefinitely to propagate the disease? To deny this, and to insist on the successive propagation of Typhus by means of contagion, unless clear proof be alleged, is unphilosophical; as it supposes the operation of two causes, when one only is proved to exist, and when that one is sufficient to account for all the phenomena. Many clear cases of the operation of miasmata in producing Typhus, and of the absence of contagion in the same cases, might, if necessary, be adduced. The memorable Black Assizes at Oxford, in 1571, furnish an instance of this. Many of the court and jury were infected by miasmata, exhaled from the filthy clothes and persons of the prisoners just brought out from their dungeons, though these prisoners were not sick themselves; and no other persons were afterwards infected by the sick, though the disease was extremely malignant and fatal. A similar occurrence took place at the

sessions of the Old Bailey in 1750.* And Dr. Haygarth of Bath, in England, one of the most credulous contagionists of the present time, admits that a typhous patient, removed from the filthy dwelling where the illness was contracted, stripped of infectious clothing, thoroughly washed and cleansed, and then lodged in a spacious and ventilated chamber, seldom or never communicates contagion to the attendants.† This is, in effect, to say that, when all existing miasmata are dispelled, and the means of generating more are precluded, the danger of infection no longer exists. But what effect would washing and ventilating be expected to produce, during the course of the Small-pox, towards annihilating the contagion?

The practical writers inform us that the contagion of Typhus, as it arises from *fomites*, is more powerful than as it arises immediately from the human body. This fact is easily explained on the supposition of the morbid principle, in this instance, being a miasma chemically constituted; for the more perfect the combination of the elementary particles composing a chemical poison, the more perfect, that is, the more virulent, will

* See Blane's Observations on the Diseases of Seamen, p. 216.

† Letter to Dr. Percival on the Prevention of Infectious Fevers.

the poison be rendered. But on the supposition of the morbid principle of Typhus being an animal poison, secreted by vascular action, the augmented virulence of fomites, as stated with respect to this disease, is altogether inexplicable. Animal poisons are universally in the most active state as they immediately issue from the bodies which produce them. The virus of the Small-Pox is the most active in the moment of taking it in its recent and fluid state; the virus of the Vaccine disease is the same, as is likewise that of a rabid animal, of the viper, &c. Every day that these poisons are kept, they become progressively weaker and weaker, till at length their activity is entirely extinguished. An example of any one of them becoming more virulent by keeping cannot be produced. There is every reason to believe that a chemical action taking place in an animal poison, after its separation from the body, (and this is the kind of action which must take place) has a speedy effect to destroy instead of increasing the virulence. The effects of fermentation on variolous pus seem to establish this conclusion. The result of chemical action on vegetable poisons appears to be the same; and there is probably no exception among all the virulent matters which are the product of organic nature.

In deciding on the contagiousness of diseases, it is essential to ascertain whether the morbid

principle be a matter of animal or chemical production. The miasmatic poisons are unquestionably of chemical origin, formed without any febrile, morbid, or organic action of any kind; and therefore they cannot be confounded with contagions without a gross abuse of terms; and, on the other hand, the animal poisons, or such as are secreted by the vascular energy of the animal body, can alone, with propriety, be denominated contagions.

By considering Typhus as a branch of the Miasmatic diseases, we produce a simplicity, uniformity, and elegant *arrondissement* in the doctrine of fevers, which cannot but recommend it to all who admire the regularity of nature. The error of blending contagiousness with miasmatic poison, withdraws men's attention from the noxiousness of personal and domestic filth as well as public nuisances. This is an object to which the care of the community cannot be too frequently or too loudly called. If cleanliness be conducive to decency, comfort, elegance, morality, intellectual activity, and the dignity of human nature, it is likewise eminently so to safety, health and long life.

AN

INTRODUCTORY LECTURE,

ON THE INFLUENCE

OF TEMPERATURE

ON

HEALTH

AND

NATIONAL CHARACTER.

TO

ALEXANDER H. STEVENS,
M. D.

NEW-YORK.

My Dear Sir,

IF I mistake not, one, at least, of the following Lectures was delivered while You were studying Medicine under the direction of the Author, and probably in your hearing.

But this is by no means the only inducement to connect your name with the publication. The respectful and reciprocal partiality which was known to subsist between my Brother and You, while you bore to each other the relation of Preceptor and Pupil; the fond expectation with which he followed you, while subsequently pursuing your studies in the Schools of Europe; the strain of your letters to him during your absence; and, allow me to add, the unfeigned pleasure with which, had it pleased Providence to spare his life, He would, undoubtedly, have witnessed your return, with flattering prospects, to your native Country; are all considerations which render this public testimony of regard peculiarly proper, and which afford me peculiar gratification in offering it.

That your career may be more and more honourable to Yourself, and useful to mankind; and that when the "last enemy," who deprived us of your Preceptor, shall be commissioned to terminate Your earthly course, he may find you, by the grace of God, prepared for "a better country that is an heavenly," is the unfeigned wish and prayer of,

My dear Sir,

Your sincere friend,

THE EDITOR.

Princeton, N. J.
Jan. 28th, 1814.

ADVERTISEMENT.

THE following Lectures were neither prepared nor intended, by the Author, for the press. He was in the habit of putting his ideas, on distinct scraps of paper, during the short intervals of leisure which his extensive practice allowed him to enjoy. These several manuscripts usually terminated at the end of paragraphs; and although, in that state, the Author himself was able to use them without difficulty; yet not having been paged, or left in due order at his decease, it is to be feared that, in some parts, the arrangement, after all the attention and care that could be bestowed, may not be that in which the Lectures were delivered. This statement, it is hoped, will disarm the severity of criticism. The Editor does not, by any means, present the following discourses to the reader, as finished compositions; but merely as hasty sketches, worthy of being rescued from oblivion.

INTRODUCTORY LECTURE,

&c. &c.

THE principles of the science, which the Medical Profession is destined to cultivate and to practise, are inseparably interwoven with every stage and condition of life. The existence of mankind, in their present state, and the origin as well as the necessity, of some knowledge on this subject, were nearly coeval. There is nothing in the history of human nature which more forcibly demands attention, or more imperiously urges us to inquiry and exertion, than our universal liableness to sickness, pain and dissolution. At the earliest dawn of life, diseases begin to assail us—they harass the periods of infancy and childhood by innumerable sufferings and dangers, and too often blast their fairest hopes by an untimely frost—they are not much less hostile to the vigour and ripeness of manhood—and they incessantly increase the burdens and imbitter the infirmities of declining age.

A constitution the most hardy, and which seems to bid defiance to all the enemies of health that surround it, is by no means proof against the slow, insidious, undermining attacks of age. Even "in the midst of life we are in death." Sad experience frequently brings all the realities of this gloomy picture before our eyes. On one day we behold the vigorous and graceful form, flushed with the glow of health and exulting in all the powers of activity; the eye sparkling with intelligence; the countenance enlivened by wit, animated by feeling, and beaming with cheerfulness and benevolence. A single instant is sufficient to dispel the charm. Often without apparent cause, sensation and motion cease at once; the body loses its warmth, the eyes their lustre; the lips and cheeks become livid. But these, as an eminent naturalist* observes, are only the preludes to changes still more hideous. The colour passes successively to a blue, a green and a black; the flesh absorbs moisture, and while one part of it escapes in pestilential exhalations, the remaining part falls down into a putrid liquid mass. In a short time no part of the body remains, but a few earthy and saline principles; its other elements being dispersed through the air, or carried off by water, to form new combinations, and afford food for other animals.—Such is the fate of man, as he

* Bichât.

is presented to the eyes of the medical observer! Whatever prerogatives or distinctions, with regard to other things, may be claimed by persons who enjoy the higher stations in society, they form no barrier against the assault of diseases; neither the pride of birth, the splendour of opulence, nor the magnificence of royal or imperial dignity, can grant a moment's respite to that sentence of dissolution which Nature has irrevocably pronounced.

These evils are so deeply inherent in human nature, that they form an essential part in the operations of the frame and constitution of man. To waste, to sicken and to die, are as natural as to live, to be nourished, and to improve in vigour and activity. In all ages of the world, in every region of the globe, in the various states of society, and in the diversified conditions of mankind, we observe, with only few and trivial differences, a perpetual reiteration of the same noxious influences, which more suddenly or more gradually destroy our health, and eventually terminate our lives. In innumerable different forms of approach, and in a thousand sad varieties of woe, this group of ills obtrude themselves on our view. In a word, they lend to history some of its most striking features—to portray many of its most pathetic images—and in the heart of sympathy they produce a large proportion of its most impassioned and interesting emotions.

Notwithstanding this universality of diseases, their concomitant consequences, a very slight survey of the world, and a moment's appeal to experience and observation will be sufficient to convince us that they exhibit much diversity, as to their appearance, prevalence and effects, in different countries. A description of this diversity at full length would exhibit a kind of medical Geography; but the task would exceed the limits prescribed to a discourse of this kind, which from its nature, must be restricted to general views and cursory notices of whatever subject happens to be selected. Instead of attempting, therefore, to go far into the inquiry, I shall only presume to offer a brief and rapid sketch of a few of the more important sources of disease in our own country, and occasionally to compare them with those of other parts of the world.

Among the noxious powers which claim our notice in the first place, are *Heat* and *Cold*, or, to speak more properly *high* and *low temperature*. Though these are obviously relative terms, and constantly to be understood in that sense; it is well known, that not only the extreme degrees of both are productive of much injury to the human constitution, but that changes or vicissitudes, even of the more moderate degrees, especially when they occur suddenly, are scarcely less pernicious.

The effects of *excessive Heat*, in its direct operation, are doubtless very unfriendly to the human body in a variety of ways; but it is to its indirect or consequential agency, as will hereafter appear, that we are to ascribe some of its most noxious impressions. In passing to the opposite extreme, it may be safely pronounced, that there is no evil incident to animal nature which occasions such an extent of annoyance and distress, as what is popularly called *Cold*. In this view of the subject, *Cold* is considered not only a source of disease, but as the privation of a comfort essential to our well-being, the absence of which, often inflicts the severest misery.

It would be easy, by descending to a few particulars, to demonstrate the operation of this agent in producing a long catalogue of acute and chronic diseases. The memorable conclusion of Sydenham, which is so often repeated for the purpose of inculcating the seriousness, and magnitude of this evil—*that cold destroys a much greater number of mankind than the combined ravages of war, famine and pestilence*,—is unhappily verified by universal experience. By recurring to the relative import of the term, and by connecting diminution with variation of temperature, it plainly results that cold may operate injuriously in all parts of the globe: and by still further taking into view the additional force which it often gives to other

morbid causes, we perceive another immense range of its destructive influence.

It must be familiarly known to this enlightened audience that the *moral* and *political*, as well as the medical consideration of temperature, has attracted much attention. And I trust it will not be deemed too wide a departure from the objects of this discourse, to notice some of the more prominent opinions which have been held on this point. The connection between those several modes of its operation is, indeed, so intimate, that they are calculated reciprocally to throw light on one another.

The effects resulting from *high*, *low*, and *moderate* temperature, as experienced by man in different parts of the world, are so obscured and modified by other circumstances, that the comparison of their advantages and disadvantages in a general estimate, becomes extremely complicated. It has been commonly held, that in every region of the earth, the power of temperature operates, with decisive influence, upon the character and condition, as well as the diseases, of human beings; and that in those countries which approach near to the extremes of heat and cold, this influence is so conspicuous as to strike every beholder. In consequence of this impression, the middle latitudes have been generally supposed to enjoy the bless-

ings of nature in an unrivalled degree. "Whether we consider man," says an admired historian, "merely as an animal, or as a being endowed "with rational powers, which fit him for activity "and speculation, we shall find that he has uni- "formly attained the greatest perfection of which "his nature is capable, in the temperate regions "of the globe. There his constitution is most "vigorous, his organs most acute, and his form "most beautiful. There, too, he possesses a "superior extent of capacity, greater fertility of "imagination, more enterprising courage, and a "sensibility of heart which gives birth to pas- "sions, not only ardent, but persevering. In this "favourite situation he has displayed the utmost "efforts of his genius, in literature, in policy, in "commerce, in war, and in all the arts which "improve or embellish life."

It is chiefly with respect to temperature, that so much stress has been laid on the effects of those imaginary *bands* or *zones*, encircling the earth, and denominated *Climates*. These divisions of the globe, terminated by lines parallel to the equator, have been invented by geographers to designate that difference in the length of days and nights, degrees of temperature, and some other effects, which result from the inclination or obliquity of the sphere. In popular acceptation, however, the term climate is generally bestowed upon any

country or region differing from another, either in respect of the seasons, the quality and productions of the soil, or even in some instances the customs and manners of the inhabitants, without any precise regard to the circumstances on which the distinction was originally founded.

If we admit the moral and political influence of temperature and climate, to the degree contended for by many, we shall be the more disposed to yield our assent to the opinion of its power over the health and bodily constitution of individuals. Montesquieu, in his "*Spirit of Laws*," seems to have proceeded further than any other in maintaining this doctrine. He ascribes to the force of climate, the principal differences which have been found in the manners, characters, government, laws and religion of different nations. In cold countries, he observes, people are more vigorous; and this superiority of strength produces many striking effects, such as intrepidity and conscious elevation, which banish revenge and cruelty; it likewise produces an higher sense of independence and security, and, while it cherishes frankness and confidence, it repels suspicion, artifice and cunning.—On the other hand, he contends, that the inhabitants of warm countries are more feeble and timorous, and possess more exquisite sensibility; and he believes indeed that the heat of climate may be so excessive as to deprive the body of all

vigour and activity. From the body, this feebleness is communicated to the mind; active curiosity, daring enterprise, generous sentiments, are all extinguished; the inclinations become debased and passive; indolence constitutes the highest happiness; no punishment is so severe as the exercise of the understanding; and slavery, with all its humiliation, is more supportable than the vigour and exertion of mind necessary for the maintenance of freedom and independence. The facts respecting the indolence of the Indians, and the effeminacy of the Asiatics, are supposed fully to establish this principle. In his career of generalization, Montesquieu ascribes these effects to the influence of heat, and lays it down as an axiom, that the inhabitants of hot countries must necessarily be indolent, inert in body, and, of consequence, inert in mind and character. He even proceeds a step further, and maintains that unlimited monarchy grows out of the condition of these nations; and considering despotism as the effect of that supineness generated by heat, he concludes that despotism is the natural government of such countries, and as unavoidable as any of the other consequences of the climate under which they live.

Notwithstanding the speciousness of this doctrine, the eloquence with which it has been enforced, and the eager reception it has obtained among intelligent men, it seems to be liable to in-

surmountable objections, and has been often opposed by great force of facts and argument.

The records of history, it has been said, appear to give little countenance to this doctrine. The ambition and conquests of the Assyrians, for more than 500 years, agitated a great part of the Asiatic world. This vast empire was in its turn overthrown by the Medes. The Persians, under Cyrus, within the space of 30 years, extended their conquests and ravages from the Indus to the Mediterranean. Achievements such as these, surely give no proof of bodily or mental enervation. But if the proofs of energy derived from war and conquest, should not be deemed sufficient to efface our impressions of the enervating influence of heat, let us behold the evidences of vigour in other departments of exertion and enterprise. The Phœnicians, for many centuries, were in possession of the commerce of the whole ancient world. The ruins of Palmyra are stupendous monuments of the industry, magnificence and taste of that celebrated city. If these are marks of indolence, where shall we look for activity and vigour?

But, if the influence of climate be so predominant and irresistible, why in the same countries where so much energy was formerly displayed, do we now find such degrading indolence, such uni-

versal degeneracy? Why are the modern Greeks so much debased amidst the very ruins of Sparta and Athens, and in the fields of Marathon and Thermopylæ? If indolence be peculiar to southern countries, how shall we account for a Carthage in Africa, a Rome in Italy, and the Buccaneers in the West-Indies.—These are some of the facts and reasonings by which the doctrine of Montesquieu has been often assailed and refuted. They seem to be entirely unanswerable. For, however disposed we may be to admit the power of heat over the bodies and minds of men, it must be allowed that moral and political causes affect the character of nations, as well as individuals, still more decisively than the influence of climate.

But, to return from this digression to the consideration of temperature, as it exists in our own country. The United States, stretching from the 31st to the 47th deg. of N. latitude, comprise, of course, a great variety of climate, and open a large field for the observation of the effects of heat and cold upon the temper and character, as well as the constitutions and diseases of the inhabitants. Although we may justly claim an exemption, throughout the whole of our territory, from those strong lines of impression, which so decisively characterize men, and distinguish diseases, in the higher and lower latitudes, it must be admitted that the differences are by no means faint or diffi-

cult to be perceived. To give a satisfactory explanation of all these differences, would not be an easy task. After allowing something, and even much, for the diversity of temperature, we are compelled to allow still more for the differences of the condition of the people, in the opposite extremes of the Union. It may be asserted that all action, whether of body or mind, has its chief source in our necessities, and progressively augments as they increase. The facility of obtaining a great quantity of food depends much on the soil. Hence it results that the nature of the soil has a real influence on activity; and we must perceive, that, in the social as well as in the savage state, a country, in which the means of subsistence are somewhat difficult to be procured, will always have active and industrious inhabitants; while in another, where nature has lavished every thing with an unsparing hand, the people will be indolent and inactive. It is not, therefore, as inhabitants of hot, but as inhabitants of rich countries, that nations are inclined to indolence.

In applying these remarks to the northern and southern States of the Union, it would seem probable, even if observation did not attest the fact, that the ruggedness and sterility of soil in the north, aided by the degree and duration of cold, must produce a hardy, active and industrious race of inhabitants; while the exuberant fertility and

rich productions of the south, with the additional advantages of a milder climate, must cherish the propensity to indolence and effeminacy.

A comparative view of the diseases most prevalent in the northern and southern States, renders it difficult to decide which portion of the Union ought to be regarded as the more healthy. Pulmonary consumption in the north may be considered nearly as an equivalent to the malignant diseases of the summer and autumn in the south. The former more properly belongs to the class of disorders originating from variation of temperature; while the latter fall under that head of noxious powers which will be treated of in the next place.

In the whole catalogue of maladies incident to mankind, there is none which presents to the community so gloomy a prospect as pulmonary consumption. In proportion as society becomes luxurious, refined and artificial, in proportion as all traces of the robust constitutions of our ancestors become obliterated in the systems of their descendants, the inequalities and vicissitudes of temperature, which are so incessantly taking place in this climate, will daily become more and more productive of this evil. Of other complaints we may expect some alleviation from the progressive improvements in the state of our soil, and in the

police of our cities, or from a more benignant constitution of air; but consumption, like an ever-active and ever-wasting pestilence, knows no intermission, suffers no abatement, and probably derives additional destructive powers from some of the very means, which are successfully employed to lessen the frequency and fatality of many other diseases. Whether medicine, in its most improved state, may ever be able to devise a plan to arrest the career of this gigantic destroyer, may perhaps remain a subject of hope, but, there is too much reason to fear, not of trust or confidence.

The next noxious power which demands attention, is that commonly known to physicians under the title of *Miasmata*, a corrupt and poisonous exhalation, the offspring of putrefaction, imparted to the air we breathe, thereby finding admission into the body, and opportunity to diffuse its pernicious influence.

Miasmata, as a generic term, may be divided into two species, which require to be accurately distinguished, even for the purpose of that general notice of the subject which is now intended to be given.

The first species is that exhaled from a low and moist soil, abounding in decaying animal and vegetable matter, acted upon by solar heat. This

may be diffused to some distance from its source, and in that manner may spread its noxious influence over cities, neighbourhoods, or even whole districts of country, according to the extent of the surface from which it is exhaled.

The second species, much more limited in origin and extent, surrounds and envelopes the bodies of men, adheres to their apparel, bedding, furniture, and sometimes even to the walls, floor, and ceiling of their habitations. This species of *miasmata* is chiefly found in the abodes of poverty, wretchedness and filth, where human beings are crowded together in a small space, and deprived of the ordinary comforts of ventilation and cleanliness.

The first mentioned species of *miasmata*, exhaled from a noxious soil, may be considered as holding the second rank in the catalogue of morbid causes; for next to the evils arising from variation of temperature, it is undoubtedly the most universal source of disease in nature. However diversified in quantity, concentration or virulence by local circumstances, by varieties of climate, season or the state of society, it is nearly co-extensive with the habitable parts of the globe. Wherever the process of putrefaction is going on to any considerable extent, this poison may be exhaled. It is, however, more frequently and copiously pro-

duced, and more highly concentrated, in warm and tropical countries than in high latitudes and frozen regions. It is commonly generated in greater abundance during the heats of summer, and operates more perniciously in autumn than at other seasons. It is almost uniformly found to be more copious and destructive in sea-ports, in situations along sea-coasts, lakes and rivers, in plains, marshes and swamps, or wherever stagnant waters are collected, than in the interior, high or mountainous districts of the country.

The effects vary, in degree of noxiousness, as remarkably as the sources. These *miasmata* may, therefore, be properly divided into *mild* and *malignant*. In the one case, they produce intermittents of a moderate and transient character; in the other, they assail the human constitution by a most deleterious influence, and spread havoc and death in every direction.

In the southern parts of Europe, in the East and West-Indies, and in many other parts of Asia, Africa and America, this malignant principle often depopulates cities, villages, and large districts; and not unfrequently converts whole countries into scenes of mortality and desolation. There are situations in all these several parts of the world (and the number of them indeed is not small) in which no human being can remain for a

few hours, without the certainty of contracting a violent, and generally a fatal disease.

It would not be difficult to mention places, possessing every blessing of nature but a wholesome air, which this poison renders nearly uninhabitable. *Brindisi*, the ancient *Brundusium*, a city of Naples, near the entrance of the Adriatic, is of this description. It was formerly large and flourishing; and may still be considered as a great city, if the extent of its walls only be regarded; but the inhabited houses do not occupy above half the enclosure. The port is the finest in the Adriatic. Fertility of soil, depth of water, safety of anchorage, and a central advantageous position are all united at this place; and yet it has neither commerce, husbandry nor populousness. In consequence of obstructions in the channel, this excellent port was converted into a stagnant, fetid and green lake, full of putrid and noxious matter. Some low grounds in the vicinity were also overflown; and all together produced annually a mortal pestilence, which destroyed or drove away the largest portion of the inhabitants. From 18,000, they were reduced to 5,000 emaciated, ghastly, livid wretches, tormented with agues and malignant fevers, dying daily in great numbers, and without a hope of improving their situation.—If proofs or examples were necessary on this subject, it would be easy to present many more of

them, equally striking, in all the four quarters of the globe.—And such as are desirous to see this subject described with all the force and imagery which the mind of a poet can confer, may find instances of the most impressive kind drawn from nature, in Virgil, Ovid and Lucretius.

The other species of *Miasmata*, mentioned as the second in the division, requires some additional observations. This febrile poison, as was stated before, is generated in the dwellings of indigence and misery, or wherever human beings are unduly crowded together, and denied the blessings of ventilation and cleanliness. Hence, the disease which it produces is often found in poor-houses, hospitals, barracks, camps, jails and ships. In all these situations, the best means of arresting the evil, such as separation, ablution, ventilation and cleanliness, at the same time plainly demonstrate the origin of it.

The disease produced by these miasmata, is that denominated *Typhus;* much spoken of in this country, but not often seen in its genuine character. Happily for the United States, the condition of society, and the comforts and resources even of the most indigent class of people, are such, with a few exceptions in some of our large cities, that Typhus can rarely prevail to any great degree. Manufacturing towns and overgrown cities are

commonly the hot-beds of typhous miasmata; and there this disease generally prevails with a malignity and mortality truly pestilential. The dwellings of the unhappy labouring manufacturers are, for the most part, in narrow streets and lanes, shut out from the blessings of light and air; and a great proportion of their habitations are cold, damp and dark cellars, where every kind of filth is suffered to collect, because it is impossible to make such homes decent or comfortable. From nakedness and want of fuel, the miserable inmates of these dwellings, of different sexes and all ages, are obliged like gregarious animals to herd together for the purpose of retaining and imparting warmth to each other, and making the most of their scanty supplies of clothes and covering. The wretchedness resulting from this mode of living, and from the constant generation of typhous miasmata which it is calculated to produce, may be more readily conceived than described. We hope the evil day is still at a great distance, when our countrymen will be subjected to the degradation and degeneracy unavoidably arising from such a system of manufactures.

One of the most remarkable and instructive instances of the production of these typhous miasmata, ever exhibited to the view of our fellow-citizens, is that seen in the crowded and filthy state of vessels arriving at our ports with great

numbers of passengers emigrating from foreign countries, and especially from the British dominions. A few years ago, several examples of this kind took place in this port, so destructive to the unhappy emigrants, and so shocking to humanity, that it was deemed necessary to collect the facts and lay them before the public. And it is confidently believed that this American statement had no small share in impelling the British Parliament to pass the statute for restraining and regulating this enormous abuse. That political, and perhaps sinister motives had likewise their influence in framing this statute, cannot indeed be doubted; but still it is to be hoped that the obligations of humanity were not entirely overlooked in that measure.

After this account of the different sources of *Miasmata*, it becomes proper now to pass to the consideration of *Contagion*, a most important source of diseases, and one which has deservedly filled a great space in modern medical disquisition. In ancient times, it is well known that *Poisons* and *Antidotes* occupied much not only of popular and medical attention, but that also of princes and the most illustrious statesmen and military commanders. An example of this is to be found in the eagerness with which *Mithridates* pursued the inquiry, and the anxiety he displayed in framing and improving a composition, fancied

to possess the powers of a universal antidote, and which has descended to the present time, still bearing his name. The frequent use of poisons in these turbulent and ferocious ages will readily explain this fact.

It has been asserted that the ancients were unacquainted with contagion. It is ascertained that no reference to the subject is to be found in the writings of Hippocrates, Celsus and Aretæus. It is likewise clearly settled, that no physicians before the Arabians make mention of epidemics, excepting such as arise from localities, seasons or constitutions of the air. Until their time, the contagion of Small-pox and Measles was unknown. Concerning Leprosy, so often mentioned in Holy Writ, many doubts and disputes continue to the present time. As to Syphilis, wherever or howsoever it may have originated, no authentic notice of it is to be found till towards the close of the 15th century.

Since the period of the Crusades, contagion and the means of arresting its progress, have obtained as much of the attention of the civilized world as had been previously bestowed upon poisons and antidotes. The havoc and terror which were spread throughout Europe by the contagion of the Small-pox, will naturally account for a great share of the impression made on men's minds at

that interesting period. The effects arising from that disease obviously explain the tendency universally felt to extend the same character to others which were by no means entitled to it.

In more modern times, contagion has become the subject of much popular, as well as medical disquisition. And it is one of the most conspicuous improvements of the present age, that the former indefinite notions on this subject have been succeeded by a doctrine more exactly circumscribed, and whose boundaries are much more conformable to reason, experience and truth.

Even in this rapid sketch, it would be improper to neglect giving an account of the morbid influence and operation of certain unknown qualities or constitutions of the atmosphere, which prove a fertile source of diseases. As one of the most striking examples of this noxious power, we may mention that common epidemic popularly called *Influenza*, which prevails in this city at the present time, and which from its frequency and severity, has become a complaint of serious character.

In addition to the morbid causes already noticed, it becomes my duty to mention that powerful and prevalent one in this country, arising from the abuse of ardent liquors. The blessings enjoyed by the labouring classes of our citizens, in

the cheapness of subsistence compared with the high price of labour, are too often squandered away for the sake of indulging this pernicious propensity. A great proportion of all persons found in our hospitals and alms-houses, are the victims of sottishness. I can add nothing to the weight of the remonstrances which have been often presented to the public, on the morbid and corrupting consequences of this vice. For the purpose, however, of refuting the vulgar opinion, that spiritous liquors are useful in enabling people to bear extreme cold, it is only necessary to state, that, in all the frequent attempts to sustain the intense cold of winter in the arctic regions, particularly in Hudson's Bay, Greenland and Spitzbergen, those crews or companies which had been well supplied with provisions and liquors, and enabled thereby to indulge in indolence and free drinking, have generally perished; while, at the same time, the greatest number of survivors has been uniformly found among those who were accidentally thrown upon those inhospitable shores, destitute of food and spiritous drinks, compelled to maintain an incessant struggle against the rigours of the climate in procuring food, and obliged to use water alone as drink. This fact is too decisive to need any comment.

Upon the whole, it results from the hasty view of the subject just now given, that we are to consider *changes of temperature, peculiar insalutary*

constitutions of the air, miasmata, contagion, and the abuse of ardent drinks, as forming some of the most distinguished and frequently operative of the noxious powers to which the inhabitants of this country, and indeed, of many other countries, are exposed. And it is for the purpose of preventing and combating the host of diseases thence arising, that all the most strenuous efforts of the medical art are to be incessantly directed.

To such persons as design to devote themselves to the practice of physic, as a profession, it cannot surely be necessary to say much for the purpose of recommending the practical department of this science to their especial attention. They cannot be too soon apprized, that it is chiefly on the acquisition or neglect of practical knowledge that their reputation and usefulness as physicians will ultimately depend. This is the knowledge they are to carry with them into the chamber of illness and to the bed-side of the sick; by the aid of this alone can they be enabled to obtain that information often obscure and uncertain, which is all-important to the framing of sound opinions; on this they must rely for relief from all the doubts, perplexities and anxieties incidental to difficult and hazardous cases; by this only can they be assisted and enlightened in the decision of the momentous questions, which so frequently involve the safety

and life of a fellow-creature; and finally, it is solely by this that they can expect to sustain with firmness and self-approbation, the high responsibility they assume in undertaking to discharge all the various and complicated duties of this arduous profession.

With the view of communicating this practical instruction in the most direct manner, as well as testing the soundness of the principles and doctrines which are to be presented in the ensuing course, the students will have frequent access to the wards of the New-York Hospital, where they will constantly find a great number of patients. In that charity, they will be conducted to the bed-side of the sick, and enjoy the advantage of seeing an experimental illustration of the doctrines delivered from this chair. In this course of *clinical practice*, they will be enabled to observe and judge for themselves; and thereby acquire the most satisfactory means of deciding whether they ought to adopt or reject the methods of treating diseases which will be exhibited to their view. It is universally known, that whatever we see makes a deeper and more lasting impression on the mind than what is learnt by description. Written observations rarely strike us forcibly until we experience their accuracy; we read them and receive a feeble and fugitive impression, unless we meet with some incident which verifies what we have

read, and thereby brings it home to the understanding and fixes it in the memory.—There are likewise many circumstances relating to diseases, and these too extremely important, of which it is difficult to convey any just impression by written or oral description; such are the different appearances of the countenance, especially of the eyes, the various states of the pulse, respiration, voice, smell, taste, different degrees of heat, and many other similar subjects of observation. Hence every experienced physician, and indeed every artist of any profession, knows much more than he is able to communicate. Students of medicine, however, find diseases described, in systems, as existing by themselves; but in practice they are found mixed and complicated in such various forms, as no description can specify, and to which no general practical rules can be applied.—It deserves to be considered, also, that a student, educated in this manner, acquires the habit of attention and discrimination; he brings the truth of general principles to the test of experience; he discovers the fallacy of some of them, and learns to ascertain the numerous exceptions and limitations to which others are subjected; he often finds the most plausible indications of cure to be delusive, and that, among the various remedies recommended, in consequence of such indications, too frequently none are sufficient to afford relief. By these means, he acquires an early and salutary distrust

of theories, however specious or captivating.—To this it may be added, that by such a course of instruction, he is enabled, further, to ascertain the relative importance of the several branches of medicine, as conducive to the main purpose of his profession—the prevention and cure of diseases, and regulates his application to them accordingly. It is proper that a student should be on his guard against wasting his time and labour in pursuits which have either no tendency, or at most a remote one, to throw light on the immediate objects of his practice. Life is too short, opportunity too fugitive, and business too urgent for every study that may be deemed ornamental to a physician; they will not even allow time for every study that has a direct connection with medicine.

From what has been said, it clearly results that *clinical medicine*, or the actual superintendence and observation of the treatment of diseases, as they occur in particular cases, is absolutely and indispensably necessary to form the true medical character, and is the almost exclusive source of genuine pathological and therapeutic science. Without this, the most minute knowledge of anatomy, the most profound skill in chemistry, the most laborious acquirements in the vast field of natural history, will be all unavailing when a physician is summoned to discharge the arduous and important duties of his profession. In making this remark,

I hope not to be misunderstood. Nothing is more distant from my design than to disparage the necessary and inestimable branches of science just mentioned. On the contrary, the utility of them is disclosed more and more every day with each step of the advancement of medicine. But what I am particularly anxious to inculcate, is the importance of watching, interrogating and scrutinizing nature, as exhibited in the morbid state, or, in other words, of acquiring that knowledge of *morbid physiognomy*, if I may be allowed to say so, which formed so distinguished a part of the character of Hippocrates, Sydenham, and many others, whose names are immortalized on the page of medical history.

The neglect of this acquisition constitutes, I believe, one of the most prominent degeneracies of modern medicine. Notwithstanding the great advances of the present age, the ancients still maintain a decided superiority with respect to the arts and sciences of pure observation. If we divest ourselves of prejudice, we are constrained to believe, that it is owing to the confidence inspired by the more extended attainments of the present times, to the facility of procuring books upon all subjects, and to the practice of drawing almost all our knowledge from this last-mentioned source; that we must attribute that deficiency in depth, originality, and justness of conception, which is

but too manifest in the works of modern observers. A great part of their time being spent in reading, they seldom view with their own eyes what the real observer sees in nature; for the truths which it costs so much trouble to extort from nature, are easily found in books. The advantages, in other respects so important, which result from the quick diffusion of knowledge, are attended with this inconvenience, that the improvement of the mind, with regard to the extent of its acquirements, is often counterbalanced by the loss it sustains in respect of the force and permanence of its conceptions;—that the memory of *words* is often enlarged at the expense of the memory of *facts;*—and that we often neglect objects which may be seen and examined by ourselves, in order to inquire what has been imagined and said by others.

But, if this be one of the disadvantages of the present state of knowledge, we are abundantly consoled by the view of things in a different direction. It is our happiness to live in an enlightened and inquisitive age. The history of the human mind during the last thirty years is crowded with occurrences equally interesting, unexpected and important. The sciences have undergone revolutions so extensive and fundamental, that we may truly say, they not only wear a new garb, but they rest upon new foundations. The present period

is one of those distinguished eras in history, towards which posterity will often look back with the deepest interest, and of which it will expect a just account from all such as have it in their power to assist and accelerate the progress of knowledge in its career of discovery and improvement. In these great discoveries and improvements, which revolutionize the sciences, it is the lot of only a small number of fortunate individuals to participate. But in the present advanced state of knowledge, there is no one who may not, in some degree, contribute to its progress. The facility of communication and the rapidity of intelligence from one portion of the civilized world to another, notwithstanding the present temporary embarrassments of intercourse, have now arrived at such a state, that the least real improvement in the most obscure art is quickly extended to all the rest, and the relations which have been established between the different objects of our inquiries and labours, enable them all to derive benefit from the progress of any one in particular. The ancients had, indeed, a distant view of these relations, and had perceived that all the arts and sciences were connected together, and formed, as it were, a complete whole. But they had remarked, or rather foretold this, by a kind of intuitive sagacity, without perceiving the mode of it distinctly, and had attempted to describe it, without understanding the nature and circumstances of the connection.

It is only in modern times;—it is only after having considered the various efforts of human industry in all their applications, and in all the different directions which they may assume;—it is only after having subjected them to rules, and combined them into systems, as well as reduced them into divisions and sub-divisions, that we have been enabled to determine with accuracy the mutual relations which connect them, and the influence which they exert, or are capable of exerting, upon one another. We now clearly see, and we can readily demonstrate, that there is nothing insulated or unconnected in the labours of man; they are all united, if the comparison may be permitted, as nations are united, by the ties of commerce; they mutually assist and depend upon each other, like the individual members of the social community. If this be true as to the sciences in general, it is eminently so with respect to medical science.

As medicine principally consists in the knowledge of facts progressively accumulated, it results that our endeavours ought to be diligently and incessantly directed to this object. All improvements in this science are an universal and unmixed good. They belong to all ages, all countries, and to all stages and conditions of society. The true end of science is the production of new powers, and the application of them to the

greatest possible variety of useful purposes. I trust, therefore, that the students of medicine, who may honour me with their attendance, will need no further incitements to a diligent and indefatigable pursuit of all the knowledge requisite to prepare them for the profession they have chosen to assume;—that they will perceive the weight of obligation which they take upon themselves,—and continually act under the impression of this *high responsibility;* and that they will be duly sensible that he who offers himself to the public *as the sole reliance and last hope of the sick*, as to this world, without adequate qualifications, is guilty of a breach of trust of the most criminal kind. And shall we then, gentlemen, who by devoting ourselves to the alleviation of the sufferings of mankind, so frequently command the interests that are dearest to the human heart;—we who from the high importance of these interests are required to search for information in all quarters, and whose studies embrace almost all the branches of physical and moral research;—shall we alone be exempted from the duty of promoting the general welfare of mankind by our labours, and of contributing to the improvement of our profession? By no means. Let us, therefore, unite our efforts, and endeavour to introduce into the study and practice of Physic, that high and refined degree of reason and philosophy, without which it is so far from affording useful aid, that it becomes in reality a public scourge.

While we proceed with zeal and perseverance in such a course as this, there is no doubt that we shall enjoy the protection and patronage of the Regents of the University, and the approbation of our country, whose opinion equally liberal and enlightened, will always bestow a due degree of commendation on meritorious and faithful exertions in the service of the public.

INTRODUCTORY LECTURE,

ON THE

CERTAINTY OF MEDICINE.

INTRODUCTORY LECTURE,

&c. &c.

THE return of the season of medical instruction most agreeably renews the relation between this Institution and the ingenuous and respectable students who honour it with their attendance. In addition to this gratification, the second session of our College opens under circumstances more auspicious and flattering, than we had reason to anticipate; and certainly much more so, than its most sanguine friends could have believed, at the first establishment.

Many persons, who are anxiously concerned for the progress of science, have supposed that the present unpropitious state of public affairs, arising from the suspension of foreign commerce, would impede the course of public instruction by

keeping at home a number of students, who, in a more prosperous state of the nation, might have been enabled to attend some of the different medical seminaries in the United States. But I trust this temporary suspension, although its pressure must be more or less felt by every part of the community, will not produce, to any extent, the apprehended mischief. As our country constantly demands and deserves the services of its citizens, we ought, in defiance of every difficulty, to be incessantly preparing ourselves for the performance of such services with the utmost degree of energy and usefulness. The approach of national calamities (if such a destination should unhappily await our country) ought to induce us, instead of allowing the least relaxation of our exertions, rather to redouble our diligence in acquiring the qualifications necessary for serving the public beneficially in the several professions in which we engage. It may be justly questioned whether peace and tranquillity (however desirable and precious to every patriotic and humane breast) are in all respects so favourable, and national commotions on the contrary so adverse to education and intellectual improvement, as they have been commonly supposed. Even the multiplied miseries of war and revolution do not appear to arrest the progress of the sciences in the degree to which a superficial enquirer might be disposed to calculate. Examples of this kind must be in the recollection

of all who are in the habit of recurring to the past, for the purpose of estimating the future. Our immortal *Harvey*, the ornament of his profession, whose discoveries form an era in its history, was never deterred from the pursuit of his interesting inquiries by the rage of civil dissensions, nor by all the ruin and destruction which the flames of intestine war were incessantly producing around him. With a dignified composure, he persevered in his physiological investigations till he was enabled to establish his principles and to rescue his reputation from calumny,—although by espousing the unpopular and the finally unfortunate cause of his fallen sovereign, he became extremely obnoxious, and suffered all the obloquy and violence incidental to a prostrate party.—The present state of the continent of Europe seems likewise to confirm this impression. The same observer who witnesses on one hand the havoc and desolations of war, laying waste some of the fairest portions of the globe, is also, on the other hand, compelled to acknowledge that the sciences never flourished to a greater extent, and that they were never cultivated with more enlightened views or enriched with more brilliant discoveries.

The sensations produced by great events, and the passions excited by political emergencies, which involve the deepest interests of the community, will be generally found to invigorate the ope-

rations of the mind on whatever subject it may be employed. We cannot, therefore, admit the apprehension, that the present lowering aspect of public affairs, nor the dread of impending calamities still more serious, can ever materially impede the progress of public instruction, or extinguish that ardour in the pursuit of science, which now glows so warmly in the American mind.

It is matter of gratification to every member of our Institution, to consider the relation between this seminary and its pupils, as highly interesting, and calculated to produce consequences of great importance. To those who are engaged in conducting the system of instruction, this relation is extremely important, not only as it involves duties of high obligation and responsibility, imposed by the authority of government, and in which the community is deeply concerned,—but likewise, as the task of teaching, when properly pursued, is inseparably connected with that of acquiring knowledge on the part of the teacher himself. To the students who attend for the purpose of receiving instruction, this relation must be considered as, at least, equally important. On the due employment of the opportunities for improvement which they here possess, will depend much of their reputation and success in their profession,—much of their capacity for improvement in future, and much of that self-approbation and tranquillity

which a punctual and conscientious discharge of duty alone can confer.

On the importance and utility of the medical profession, it is not necessary now to dwell. Every member of society is more or less interested in it, for every person has health either to preserve or to regain. The esteem in which the guardians of health have been held in all ages, is a practical and convincing proof of the effectiveness and utility of medicine ; for respectability and confidence will not ordinarily, with the general consent of mankind, continue long to be materially misplaced.

It is requisite, for the purpose of cultivating medicine with ardour, that it should be considered as consisting of sound and fixed principles, and founded upon a solid basis. The uncertainty and inutility of it is the favourite cant, among men who enjoy robust and uninterrupted health, among incurable patients, and among that portion of our fraternity who avail themselves of it as a shelter from the reproach of their ignorance and blunders. If the charge were heard only from such persons as these, there would be no need of serious vindication. But many philosophers of reputation have regarded medicine as a deceitful art, whose dominion over our minds is founded solely on credulity and weakness. As this question concerning the soundness and certainty of medical principles

has been often agitated, and is really very important, it will not be amiss to glance for a moment at the leading topics in the discussion.

The cavillers against the solidity of medical science have endeavoured to justify their opinions on some of the following grounds.

They maintain, that the principle of animal life is enveloped in so much mystery and darkness, as to elude the utmost force of inquiry; and that of consequence we are left in hopeless ignorance of the subject on which we are incessantly called to operate, and the explanation of which ought to constitute the foundation of our knowledge. The secret springs of life are, in reality, concealed from observation, and we can form no precise idea either of the power which animates our bodies, or of the means by which the influence of this power is exercised. This is indeed too evident from the slow progress hitherto made in the investigation of this principle, though men well qualified by their abilities, learning and experience, have for more than two thousand years been communicating to the world all they could add by means of just reasoning, to the mass of facts collected by diligent observation. Whoever applies himself to the study of nature, must own we are yet greatly in the dark in regard even to inert matter, and that we know but little of the properties and powers of

the inanimate creation. But we have all this obscurity to perplex us in studying animated nature, with the addition of a vast deal more, arising from the unknown peculiarities of life.

If an intimate knowledge of the nature of vitality were necessary to serve as the basis of the healing art, the art itself would fail in its essential and fundamental principle. The question then is reduced to this,—whether it be absolutely necessary for the useful practice of physic, to be enabled to penetrate into the essence of the vital powers, and to form a precise notion of their mode of operating on the human body.

To this question, we reply decidedly in the negative. Man knows the essence of nothing; neither of matter, which is always before his eyes, nor of those secret principles which actuate and determine all the phenomena of the universe. He is often occupied with the consideration of causes, which, he flatters himself, he has discovered, and of others which he feels and laments his inability to ascertain; but *first causes* are entirely withheld from his sight. He sees effects, or, rather, he receives impressions; he is constantly observing new relations; he arranges them, in order to fix the recollection of them in his mind; to appreciate them better, and to draw from them whatever may contribute to his preservation, or afford him

additional enjoyment:—this is the sum and substance of human knowledge.

It is worth considering, how far the knowledge of *first causes*, in the pursuit of which so many profound lucubrations have been uselessly expended, is really applicable to the condition and wants of mankind. Is it necessary for the mariner to possess a scientific theory of the winds, to enable him to obtain the full effect of their impulse in traversing the ocean? or must he understand the cause of the tides, in order to avail himself of their aid in ascending a river? Must the brewer, the baker and the tanner understand the doctrines of chemistry, on which their respective arts are founded, before they are enabled to conduct them with practical success? Is it indispensable that the principles of vegetable life and nutrition should be extorted from nature and distinctly understood, before agriculture can be practised with advantage, or made to yield sustenance to the animal world?—This surely cannot be asserted. It is allowed to man, in his present state, to observe facts, and to make the best inductions from them he can; this is sufficient for him; he knows nothing of the nature of causation.

The phenomena of health and disease, the effects of aliments and remedies, all come under the cognizance of our senses, and we draw rules from

them which are necessary for the practice of our art. We may therefore conclude that this objection to the certainty and firmness of our principles, is not well founded. As the want of knowing causes is not peculiar to medical science, if the reproach of uncertainty and conjecture can thence be applied to it with any truth, the principles of almost all the other sciences are exposed to a similar charge.

Another objection to the certainty of medical principles, is derived from our ignorance of the *nature and proximate causes of diseases.* This, in effect, is only a repetition of the former objection in different words. We are acquainted with the nature and causes of diseases, so far as they can be manifested to our senses by the observation of facts. We know that the irritation of the sanguiferous system, denominated *fever*, produces certain changes, or rather, by certain changes is made known to us, and that it is only by these changes that its existence can be ascertained. When a person coughs, breathes with difficulty, feels pain in some part of the chest, and is affected at the same time with fever, we pronounce that he labours under *Pneumonia.* If it be demanded what is *Pneumonia*, we reply, it is a disease in which these several circumstances are combined. If one or more of these circumstances be wanting, it is not Pneumonia, or at least not a true example

of what is commonly designated by that title; therefore it is the concurrence of these circumstances which constitutes the disease. The word *Pneumonia* only exhibits them in an abridged form; the word is nothing of itself; it expresses an abstract idea, and represents by a single character all the images of a large picture. When, therefore, we are not satisfied with knowing a disease by what it presents to our senses, but enquire what is its real nature, what is its essence,—we do little more than ask, what is the nature and essence of a word, of a simple abstraction. It is far, then, from being correct, to assert with an air of positiveness and triumph, that physicians are altogether ignorant of the nature of fever and many other morbid conditions of the system; and that they not only judge and act at random, but often employ agents whose essential properties are entirely unknown. With regard, indeed, to the precise changes which the principle of vitality undergoes in taking on a morbid disposition, they are confessedly unknown; since they are necessarily involved in all the obscurity which belongs to the vital principle in the state of health. But the causes and circumstances which are obviously connected with the disease, and make part of its history, are facts within the power of observation; they may be discovered and laid hold of by our senses; they may be communicated by faithful relation; and as they occasion

certain definite phenomena in the animal economy, we accustom ourselves to recognise them, and to draw from them inferences to guide our practice.

The uncertainty of the principles of medical science, has also been positively inferred from the fact, that diseases are so various and so susceptible of complication, as to render it impossible for the most accurate observer to lay down rules by which others can always discover and disentangle them ;—that they undergo so many modifications from age, sex, temperament, climates, season, state of the atmosphere, mode of living, occupation, and previous complaints, and are so much influenced by the state and passions of the mind, that it is impossible, amidst so many various and conflicting causes, to assign to each its proportion of agency, to attribute to each phenomenon its just value and natural place, or to form a suitable plan of treatment, or, finally, to draw inferences so certain and conclusive as to be worthy of that importance and dignity which the healing art has always claimed.

Every reflecting physician, who understands and candidly appreciates the difficulties of his art, will be ready to acknowledge that there is much force in this objection. It is important to be duly aware of these difficulties, for the purpose of being

enabled to devise the best means to obviate and remove them. We are obliged, indeed, continually to admit exceptions to the rules laid down to guide our conduct. It is to be lamented, that there is so little in the application of such rules, or in the plans of treatment which they enjoin, that can be considered as fixed or invariable. With the exception of some general principles, which, in consequence of their general nature, are little adapted for use in the details of particular cases, it seems as if the theoretical knowledge of a physician were nearly reduced to nothing at the bed-side of the sick; so that his practical skill appears chiefly to reside in a sort of instinctive acuteness, improved by observation and experience. It requires a vivid conception to penetrate a disease at a single glance, and to lay hold of all its characters at once. In morbid actions, however, the principal phenomena may be reduced to a few; most of them resulting from the combination and the different degrees of intensity of a small number. The order in which they occur, their relative degrees of force and importance in the animal economy, are sufficient to give rise to all the varieties of diseases; in the same manner as a few signs produce the finest compositions of music, and a small number of sounds make up all the wonderful complications of language.

The objectors to the certainty of medical prin-

ciples have likewise contended, that the nature and properties of the substances employed as remedies are very little understood; that their mode of operating upon the living body is still more unknown; and that there is scarcely any probability of clearing up this obscurity.

In answer to this, it may be maintained, that there appears to be no necessity, and indeed but little advantage in knowing the peculiar properties of the peruvian bark, in order to observe its specific virtues in the cure of intermittents; and that it would probably avail us but little to ascertain the nature of antimony and mercury so far as to explain in what manner the former excites vomiting, and the latter destroys the poison of syphilis. By observation and experience we gain a knowledge of the powers of these remedies, and a more minute acquaintance with them would scarcely render the facts belonging to their history more certain, or connect them together in a better order.

The distrust of medical principles has been further increased by observing the difficulties, doubts and fallacies which so remarkably attend every step of medical experience. The effect of a particular remedy, however well ascertained, may depend upon a multitude of causes which the physician cannot possibly detect. The silent, yet

incessant operation of that restoring power, denominated *vis medicatrix*, always tending to re-establish order in organized bodies;—the progress of the disease itself, whose nature and course may not be rightly understood;—the changes produced in the corporeal or mental condition of the patient, or in the external circumstances around him;—all these, and many other things are liable to impose on the soundest and most guarded judgment, and to lead a physician to attribute his success to a series of combinations, the operation of which is directly the reverse of what he imagines. Hence inexhaustible sources of error, both for the art itself, and for him who exercises it.—A cure follows the application of a remedy; the remedy therefore has produced the cure,—"*post hoc, ergo propter hoc.*" This is undoubtedly a specimen of very bad reasoning in medicine; yet by such a fallacious rule as this, all the articles of the *Materia Medica* have been brought into use, have been arranged, and the method of administering different remedies has been reduced to a system. Nothing demands more enlightened understanding, more caution and discrimination than the discovery of truths of this kind;—for, in inquiries after them, nothing is easier than to be led astray, even whilst pursuing the right path of investigation;—nothing more uncertain than the proofs upon which our results are supposed to rest, at the

very time when we think we have obtained such as are perfectly sure.

The uncertainty and fallacy of experience in medical researches undoubtedly open an inexhaustible source of error at every step of the physician's progress in the pursuit of truth. If any operation of the mind requires the possession and exercise of all its best faculties, it is unquestionably that of determining, from the symptoms of a disease, the best indications of cure, estimating the powers and effects of remedies, and establishing rules for whatever emergencies may take place in future. With all its imperfection and uncertainty, medicine can still justly claim a body of principles and doctrines eminently entitled to confidence. If we could suppose it to be otherwise, and believe it incapable of being reduced to rules and principles, it would be unlike all other arts; those who practise it would degenerate into a herd of visionaries, empirics and impostors, and, instead of being protected and fostered, they ought not even to be tolerated by a wise government.

While the subject of medical experience is under consideration, it may not be improper, (as mistaken opinions concerning it are more or less prevalent among all classes of people,) to offer some observations on the *medical law of evidence.* This becomes the more expedient, as every person

ought to be placed on his guard against the deceptions which every where abound on this point, and more especially as physicians are often accused of a culpable incredulity and indifference to improvements in the treatment of diseases, when they hesitate to believe the stories of wonderful remedies, and wonderful cures which are so frequently propagated in every community, and often gain belief in the minds of judicious and respectable men.

As the human body is a machine of such singular intricacy and complication,—as the diseases to which it is liable are so numerous, diversified, and still so much involved in doubt and obscurity,—as the powers and uses of the remedies employed in the cure of these diseases are so imperfectly understood,—and as from these several sources collectively, such a vast amount of misapprehension and misstatement must be incessantly arising;—it ought to create no surprise to find that *the evidence which is requisite to prove or disprove any proposition in the science of medicine, is of a peculiar kind.* It differs entirely from that species of proof which satisfies a court of law. Both direct and circumstantial evidence, which would leave no doubt in the breasts of judges and juries, often have not the slightest tendency to render a medical fact even *probable.* The declarations, and even the oaths of the most conscientious, disinte-

rested and discerning men, are all entirely insufficient.

The reason of this is, that few men, even those of considerable intelligence, distinguish accurately between opinion and fact.

When a man asserts he has been cured of a particular disease by a certain remedy, he is apt to think he is declaring a fact, which, as coming under his own observation, and experienced in his own person, he knows to be undeniably true; whereas this assertion, simple and unequivocal as it may appear at first sight, includes two opinions, in both of which he may be completely mistaken. The first is an opinion of his having *had* the disease specified; the second, that the medicine employed *removed* the disease. While the ablest men of the profession are so liable to mistake in forming opinions of this sort, it will not be thought strange that others should be much more so; and it is plain that a mistake in either of the opinions stated, must totally invalidate the whole assertion. Most people, indeed, are convinced that they are acquainted with the malady they are afflicted with; they consider it as a mere matter of fact; and when they are cured, they have as little doubt of the remedy that accomplished it. This belief is often strengthened by the confident declarations and specious behaviour of the person who exhibits

the remedy; and if the patient possess gratitude, this also increases the impression and heightens the delusion. He is thus easily prevailed upon to swear positively, both to the disease and the remedy, as if they were plain facts, obvious to the senses, and exempt from possibility of mistake; whereas both the one and the other are frequently beyond the reach of human knowledge.

Instances of this delusion are often presented to the public in certificates and affidavits concerning the cure of consumption, gout, hydrophobia and other intractable distempers. This species of unintentional fraud or perjury has become exceedingly common of late years in every part of Europe and the United States; and the more improbable the fact is, the more numerous are the certificates or affidavits, and the more respectable the signatures. Judges, clergymen, and many other estimable members of society, are frequently attesting that themselves or their neighbours have been cured of incurable diseases, or have derived signal benefit from the use of some insignificant or dangerous nostrum; but, however benevolent or upright the intentions of these gentlemen may be, they ought to be plainly informed that the fact in question will not be considered, by any person competent to examine the subject, as rendered in any degree more probable by this positive testimonial.

But, to return to the question of certainty in the principles of medical science.—It has been contended by those who deny any degree of certainty in the doctrines of our profession, that if they were well founded, theory would at all times be the same; that the practice too of one age would not materially differ from that of another; that ancient and modern physicians, men of all schools and all countries, would agree at least upon some important points; whereas, in running over the history of medical opinions, it is wonderful to find such a difference in their views, such a contrariety in their modes of treating diseases.

Nothing has contributed more to withdraw the confidence of society from the medical profession, than the fluctuating and transitory character of medical theories. The keenest shafts of wit and ridicule have often been levelled at this trait of everlasting inconstancy. But it seems to have been forgotten, that physic, like the other sciences founded on experience, is continually progressive, and therefore subject to perpetual change; so that, without the suggestions of vanity or an unwarrantable desire of innovation, we may sometimes be tempted to differ from our venerable predecessors. The origin and growth of theoretical opinions sufficiently explain their fugitive character. Every step of experience approaches towards system; for, by observing the apparent relations of things,

as they are presented to our view, we are involuntarily led to the establishment of principles. And theory, or the application of these principles to explain the phenomena around us, is the natural and favourite process of the human mind. This employment, so congenial and delightful, does not allow us to wait the preparation necessary for its exact performance; and our eagerness impels us to anticipate the principles which yet remain to be discovered. The bewildering gleams of fancy are mistaken for the luminous rays of science; we are led astray by the fantastic delusion, and pursue it through all the fanciful and treacherous paths of hypothesis.

Things which appear at first sight to be naturally related, present themselves in a certain order to the view of the observer; but he does not immediately discover that order which is permanent and invariable. Amidst the variety of circumstances which surround any fact, to seize that whereon it necessarily depends, requires much closeness of attention, and commonly much variety of experience. But the mind will follow, in the mean time, its leading propensity; and thus theories are produced, adopted, afterwards invalidated, and finally destroyed by successive observation.

Theory has so often sunk beneath the stroke of

experience, that we have been led to imagine a natural enmity between them; which by an easy transition is extended to their several authors and patrons. Hence *Theorist* and *Empiric*, are in medicine, terms of mutual reproach, and serve to designate two opposite parties, as much as any of the opprobrious distinctions which take place in the political world.

It must be confessed, indeed, that medical writers are often divided in their principles, and that practitioners are often equally so in their plans of treatment. Systems of speculation have risen up and fallen in quick succession; and even the modes of treating diseases can plead no exemption from this instability.

But an intimate acquaintance with the ancient writers, an attentive examination of different modes of practice, and an accurate survey of the operations of nature, will enable us to obviate many of these objections, and to reconcile many apparent contradictions. With regard to theoretical opinions, founded not simply upon facts themselves, but upon the manner in which they are arranged and combined, it signifies little how they disagree, provided practice is regulated by facts, and never forsakes the indications which they furnish. The mathematical, the humoral, the chemical and the spasmodic physicians, all

agreed, to a considerable degree in their practical inferences, and only employed their theories to connect their doctrines together. From the time of Hippocrates to the present day, intelligent practitioners have pursued what he so ably pointed out; practice has not changed in the degree which has been alleged; and similar means have generally been employed to bring about the same effects in every age, subject, indeed, to such modifications as the ever-varying circumstances must have suggested to the minds of enlightened observers.

In addition to all the foregoing objections, the utility of medicine has been questioned by some, even supposing all the difficulties hitherto stated to be overcome, on the ground that the exercise of the healing art would require so much sagacity and so many qualifications, that few men could be found equal to the arduous task of undertaking it; and therefore that it should be looked upon as a dangerous weapon, placed in the hands of ignorance and quackery.

But in answer to all this, it may be confidently alleged, that although disease and death are the necessary consequences of the laws of the animal economy—although man from his very constitution, is more exposed to causes of disease than other animals, even if civil institutions and social

habits did not expose him to a much greater number of noxious impressions;—yet still the desire of prolonging life and of avoiding pain, is altogether as natural as to suffer and to die. Nature teaches us to change an uneasy posture, to direct the attention to painful parts, and to sooth uneasy feelings by the application of gentle heat and moisture; she also points out the necessity of repose and removal from noise, as well as every other source of irritation, as soon as our organs of sense experience the derangement induced by fever. Singular appetites, or craving of remarkable articles of food or drink, which cannot be accounted for, often suggest the means requisite for recovery. In short, as all our wants are changed into sufferings when they are not supplied; and, as Nature makes a declaration of this sort in the clearest manner, so we may give the name of remedy to every thing that satisfies a want, and call *instinct*, or the cause of those spontaneous actions, the *first of physicians*. Here then, we behold the foundation of our art, laid by the hand of Nature herself; and laid so deeply and firmly, that no efforts we can make, are sufficient to subvert or destroy it. If it were possible therefore to set medicine aside, as a science and an art, it would still be impossible to suppress the instinctive feelings of mankind, and, of consequence, a much greater number of victims would be sacrificed to the pretensions of ignorance and audacity.

INTRODUCTORY LECTURE,

UPON

MEDICAL EDUCATION.

INTRODUCTORY LECTURE,

&c. &c.

THE science of Medicine, in the extent which it now possesses, exhibits such a vast expanse of knowledge, and is made up of such a number of other sciences, collateral or subordinate, that the best mode of conducting medical studies, especially with regard to their order, succession and duration, presents an inquiry of equal importance and difficulty. As different opinions on this subject have been held by very able men, I shall only attempt to offer a rapid sketch of some parts of it, which seem to be entitled to particular attention. And it will be recollected that this sketch, being entirely abstract and speculative, is only designed to exhibit the relations and dependence of the different branches of medical science on one another.

It is generally agreed, that a system of instruction in medical seminaries ought to embrace five principal subjects.

1. The knowledge of the *animal economy.* This is acquired by the study of Anatomy, Chemistry and Physiology, or the science of man in the state of health.

2. The knowledge of the various substances, both simple and compound, which *act* on the animal economy. These necessarily belong to one of the three kingdoms of nature. Their history, qualities and uses are learned by the study of the Materia Medica, Chemistry and Pharmacy.

3. The knowledge of the rules and means most conducive to the preservation of the body in a state of health. For this purpose, as the subject is of great extent, the study of Natural Philosophy, Chemistry and Physiology becomes necessary.

4. The knowledge of the various diseases incidental to the human body, their nature, causes, symptoms and the remedies best adapted to cure them. This is learned by the study of Pathology, or the science of man in a state of disease, and by that of Therapeutics, and Clinical Medicine and Surgery.

5. The history of Medicine and Surgery, and the best manner of studying these sciences. By this, a complete view of the subject, in its whole extent, will be exhibited. What has been already done by our venerable predecessors, and what remains to be accomplished, will thus be distinctly seen.

According to this system of medical education, the various subjects of instruction which compose it, when arranged in an elementary order, will stand as follows:

1. The plan of studying medicine.—2. General and experimental Natural Philosophy, so far only as it is connected with medicine.—3. Chemistry.—4. Anatomy.—5. Physiology.—6. Materia Medica—under which it is proper to comprehend every thing useful in the healing art, which Zoology, Botany and Mineralogy afford.—7. Pharmacy.—8. The art of Prescribing.—9. The general means of preserving health, or what is commonly called Hygiene.—10. Pathology.—11. Therapeutics.—12. The Practice of Physic and Surgery.—13. Clinical Medicine and Surgery.—14. The History of Medicine and Surgery.

Under another point of view, these different branches of medical instruction may be divided into *Theoretical* and *Practical*.

The theory of medicine consists of preliminary or introductory sciences, and those which are essential, or immediately necessary and indispensable in the prosecution of medical inquiries.

The former, that is, the preliminary, comprehend Anatomy, Chemistry, Physiology, Pharmacy and Materia Medica.

The object of the latter, is to apply these preliminary sciences, to accomplish the preservation of health and the cure of diseases. These direct or essential theoretical sciences, are Hygiene or the general means of preserving health, Pathology, and Therapeutics.

The practical department of medicine consists in distinguishing and treating diseases, as they occur in particular persons.

Since it is necessary to commit to a limited number of persons, the charge of teaching all these different branches of medicine—while at the same time it is neither possible nor expedient to create as many professors in a medical seminary, as there are divisions in the arrangement which has been stated—it becomes proper to assign several departments to single professors. This has always been done at Leyden, at Edinburgh, and at Gottingen, as well as at all other

celebrated schools of Physic. Boerhaave taught five of the most important branches of Medicine, viz. Chemistry, Physiology, Botany, and the Institutions and Practice of Medicine.

If an individual possessed such extraordinary powers of mind, and such a share of health, activity and leisure, as to be competent to teach all the various departments of Medicine, students would derive the most important advantages from his labours; because every part of the whole system would be consistent with itself. In proportion as professors are multiplied, some inconveniences may be apprehended from collisions of opinion as well as from disparity of talents.

After mature deliberation on the relations subsisting between the various branches of medical science, the following considerations render it proper to unite several departments of instruction.

1. Anatomy may be separated from physiology; but physiology cannot so properly be taught by itself; it is most conveniently conjoined with the study of the human body; otherwise every physiological system will be defective and erroneous. When the anatomy of the human body is considered separately from that of other animals, many important views, necessary references, interesting illustrations, and useful conclusions, are

lost. There is no doubt that comparative anatomy has thrown more light upon physiology than all the knowledge of the animal economy derived from other sources. Many of the animal functions are even totally inexplicable without its assistance. The charge of teaching Zoology, wherever it becomes a part of medical studies, ought therefore to be intrusted to the professor of Anatomy and Physiology.

2. Mineralogy cannot be satisfactorily understood by confining our attention to the external appearances of the various minerals: the changes which they undergo by the operations of chemistry must therefore be detailed in order to throw additional light on the subject. It is easy for the chemist to teach Pharmacy; and the *art of prescribing* is intimately connected with the fundamental principles of the science of Pharmacy. All these several departments of instruction may therefore be properly committed to the same person.

3. The professor of Materia Medica must necessarily be well acquainted with Natural History. The study of the three kingdoms of nature is unavoidably undertaken by him, and therefore becomes familiar to his mind. These inquiries, which are so essential to the prosecution of his main subject, prepare him to give lectures on Zoology, Mineralogy and Botany. But as the

two former of these departments, for cogent reasons, are assigned to the professors of Anatomy and Chemistry, it will not be considered improper, that the professor of Materia Medica should also teach Botany.

In order to preserve regularity in this system of instruction, and to maintain a proper separation between the several departments of teaching, it is advisable for the professor of Materia Medica, after having exhibited a complete history of the various medicines, and after having shewn specimens of each, to content himself, both in his lectures on Materia Medica, on Botany and on Pharmacy, with enumerating the qualities and doses of medicinal substances ;—and that he should refer to the teacher of Therapeutics, and the Practice of Physic, the charge of explaining the principles which regulate their use, their modus operandi, and the detail of the particular cases in which they should be employed.—Without this restriction, Materia Medica, Botany and Pharmacy, could not be classed among the preliminary sciences; and a confusion in the duties of the professorships would thence ensue.

4. No physician ought to be presumed to be unacquainted with Mechanical Philosophy; it ought always to serve as a guide in the study of the preliminary sciences. For this reason, all the

medical professors ought to be prepared to teach it. But no professor is so particularly required to understand that science with critical exactness as the person to whom the subject of Hygiene is committed. It is the duty of this professor always to hold himself in readiness to give a course of instruction on any part of mechanical philosophy which it may be necessary to bring in aid of the doctrines delivered in his own department. And therefore his attention cannot be too often directed to this science.

5. Pathology, Nosology and Therapeutics ought not to be taught separately from each other. For it certainly is the duty of the same professor to consider man in a state of disease; to exhibit the symptoms of the complaints whose causes he shall have previously explained; to ascertain, from the history of the symptoms, the nature of the disease, its stages or periods and the prognosis; and to point out on what principles the treatment ought to be conducted.

Semeiology, one of the sub-divisions of Pathology, cannot be explained by itself, without occasioning numberless repetitions and a great confusion of ideas; since the detail of the symptoms of diseases is included in Pathology;—and the same detail is the subject of Nosology, which forms the

basis and order of the observations to be delivered by the professor of the Practice of Physic.

6. The professors of the Practice of Physic should teach that great and important branch of science in its full extent.

7. The plan for conducting medical studies cannot be pointed out by any teacher with more advantage, than by the professor of the History of Medicine, who must necessarily have occasion, every day, to mark the succession and to appreciate the value of publications intended to advance the progress of medical science.

Proceeding under the guidance of the views which have been presented, and after deriving every possible aid from experience and observation in numerous and varied trials, a distribution of all the different departments of physic and surgery, according to this plan might be made among ten professors.

The last, in order, of these departments, would be the History of Medicine and Surgery, and the plan for conducting medical study and observation. This subject is one of the most profound and philosophical, and, at the same time, one of the most interesting that can engage the consideration of students. These two courses, according

to the preceding sketch, are given in charge to one professor.

The whole of the proposed system, shews the intimate relations by which Surgery is connected with Medicine. It certainly cannot be denied, that, in every just estimation of the subject, Surgery has always been regarded as a part of Medicine; and it must be granted, that, from the first lesson of theory, to that wherein the means of cure are pointed out, the education of physicians and surgeons has been conducted on the same principles. By thus restoring surgery and medicine to one another, the moderns will follow more closely the laws of nature, from which they have improperly deviated since the times of the ancients. In the schools of Cos, Smyrna and Alexandria, all the physicians were surgeons. The treatises of Hippocrates on Surgery, are reckoned amongst the best to be found in his works. Galen wrote on the same branch, and practised it with success. In the time of Celsus, medicine was divided into three parts, the first of which comprehended the treatment of *internal* diseases; the second that of *external* ones; and the third part respected *dietetics*, the knowledge of which is quite as necessary to surgeons as to physicians. In the time of Ætius, the physicians still practised surgery. And this fortunate union of the two sciences, which should never have been interrupted,

ceased on the decline of the schools of the empire in the time of Justinian.

Although many faults may doubtless be discovered in several parts of this plan of medical education, it must be conceded that it presents a consistent and regular system. While we admit that it is too complicated, too unwieldy and too expensive for this country, in its present state, we cannot forbear hoping that the time will arrive when we shall be able to make a nearer approximation to it.—A course of lectures on the history of Medicine, and on the plans for conducting medical study and observation, though these subjects do not certainly rank among those which are of primary and fundamental importance to the student, ought undoubtedly to be reckoned among such as are the most arduous, the most learned, and the most useful in the whole system.

Systems of education in America, notwithstanding the improvements they have undergone within a few years past, are still extremely defective. At present, we are necessarily restricted to the consideration of the more prominent defects which may be observed in the plans of medical education. And here, our time will only allow me to remark, that, in general, public opinion and the prevalent usages of this country, permit the business of medical instruction to occupy so short a

period, and to be hurried over with so much precipitation, that it is necessarily very imperfect, and the attainments of the student very superficial. This defect must be unavoidably experienced at every stage of his subsequent course. As example on this subject will probably be much more impressive than opinion, I shall briefly exhibit an account of the objects of study, and the periods of time, severally assigned for a course of medical instruction by some eminent physicians in Germany, Great Britain and France.

During the late agitation of the subject of medical reform in Great Britain, much attention has been bestowed on the several points of medical education. In a late publication, one of the most distinguished physicians* in England has presented a delineation of a course of study, from which he endeavours to make it appear that a young man may employ five or six years at medical seminaries with advantages of the most essential kind, which he must entirely forfeit by setting out sooner as an independent practitioner, and which students of three years, as such, can therefore never possess.

The following is a sketch of the plan of study which he proposes.

* Dr. Beddoes.

1st year. Dissection, anatomical lectures, reading on that subject, drawing, and comparison of anatomical engravings with the objects in nature. For the purpose of relaxation, as well as instruction, a course of chemistry, and reading of elementary books on that science. These studies occupy the winter. In spring and summer, a course of comparative anatomy, dissection of animals, study of botany and physiology.

2d year. Anatomy exactly as before ;—attendance on clinical lectures in surgery : if none of these should be given, let there be close study of surgical cases, particularly of surgical accidents at first ;—let morbid anatomy be practically cultivated at every opportunity. In spring, summer and autumn, let attention be given to practical chemistry, pharmacy, botany and materia medica.

3d year. In winter, anatomy and surgery to be still continued ; but external diseases now more than accidents. During spring, summer and autumn of this year, let obstetrics, medical jurisprudence, comparative anatomy and physiology, be the principal objects of attention, and some of the other before-mentioned pursuits may also be occasionally resumed.

4th year. Anatomy to be pursued with unabated diligence—lectures on the practice of physic—

clinical lectures—observation of medical cases and reading of practical books.

5th and 6th years. Close attendance on hospitals, with a course of practical reading and lectures, at Paris or London, if these places be accessible. During the summer and autumn of one of these years, let some time be employed, if possible, in attending military hospitals, especially in the field. During the rest of these years, let some attention be given to oral instruction, as it may best offer, in other branches of natural history besides botany, in natural philosophy and in some of the more useful of the speculative sciences. From one or other of these, the acquisition of as many facts as possible concerning the mental operations, should be considered as an essential part of the stock of knowledge necessary to the physician.

The Faculty of medicine of Vienna, the establishment of which is recent, since it was the work of Van Swieten, prescribes to the pupils five years of study. The *first* year, they are directed to study Anatomy, Botany and Chemistry—in the *second* Physiology is added to these—during the *third* year they continue the study of Physiology, and that of Pathology and Materia Medica is added—during the *fourth* year, they join to the two last mentioned branches, the study of the Practice

of Physic—and in the course of the *fifth* year, while they continue to pay the utmost attention to the Practice of Physic, they are directed to recapitulate all their former studies.

Monsieur Tissot, who has written very well on this subject, advises four years of study. He prescribes for the *first* year, the same course as Van Swieten—for the *second*, he recommends the course allotted by Van Swieten for the third, with the addition of Surgery, which is omitted in the distribution of the plan formed by Van Swieten. For the *third* year, he advises the study of the history of Medicine, of Prophylaxis, of medical Jurisprudence and of Clinical Medicine; on which latter, the students ought to be required to spend exclusively the *fourth* year.

About eighteen years ago, a learned and respectable society of physicians at Paris, after much deliberation on the subject, communicated their opinion to the public, that the duration of medical studies ought not to be less than six years—and for this space of time, they direct the following course of study.

1st year. Natural Philosophy, so far as it is connected with Medicine, Anatomy and Physiology. Within this period, the students should

begin to learn the art of dissection, and devote themselves to it.

2d year. Continuation of the preceding studies, Dissection, Chemistry and Mineralogy, Zoology and Botany,

3d year. Continuation of Anatomy, Chemistry and Botany, to which are added Materia Medica, Pharmacy and the Prophylaxis or Preventive Medicine.

About the middle of this third year, the students begin to attend the wards appropriated to practical or clinical instruction. They attend a course of lectures on the operations of Surgery, of which they study the elements.

4th year. Continuation of Materia Medica, Pharmacy and Prophylaxis, and the Institutions of Medicine, that is, Pathology, Nosology and Therapeutics. All this period, the students learn the art of applying bandages, and practise the operations of surgery on the dead body. They likewise begin the study of Obstetrics, and give a large portion of time to the lectures on Clinical Medicine.

5th and 6th years. These are dedicated to the study of Clinical Medicine and Surgery. Medical

Jurisprudence and the History of Medicine also claim some portion of time during these two years.

From a consideration of the courses of instruction which have been now presented, it will be easy to perceive the importance of laying the foundation of medical education in the most exact acquaintance with the mechanical and vital parts of the human frame. The knowledge, indeed, of the human structure should be ultimately rendered so ready and distinct, that as soon as a part of the body is named, there should instantly arise a clear image of its situation, dependencies and office, so far as the latter is understood.—To this should be superadded the *anatomy of disease*. By this course, what may be called the *grammar of universal medicine*, will be placed in the hands of the student, and eventually treasured up in his memory. The pupils of most schools, for want of being thoroughly grounded in these principles, are turned loose upon the sick, not only with scanty and confused notions, but with very inadequate power of acquiring others. Had a severe practical study of the ordinary structure been generally followed up for the last fifty years by an investigation of every gradation of change, induced by disease, we should, by this time, have had infinitely less uncertainty in the doctrines and principles of medicine.

By the application of genius and industry to the art of healing, much has been already done, and much more may be expected to be hereafter atchieved. The ancient fabrics of physic have undergone a close examination—a great proportion of them has been condemned and demolished—much rubbish has been cleared away—that part of the pile alone which rests on the rock of truth and enlightened experience, has withstood the force of every assailant and defied the ravages of time.

The true end of science is the production of new powers, and the application of them to the greatest possible variety of useful purposes. The votaries of Medicine then should never be idle, nor weary in the pursuit of discovery and improvement; for industry or accident may eventually teach them to subdue maladies which now elude every exertion of art. There was a period when *ague* and *syphilis* were considered as incurable: the antidote to both is now well known. It is not presumptuous to believe that Nature, in the fulness of her beneficence, holds a remedy for every evil by which we are assailed. The period we trust is not remote when the means of arresting the ravages of *pestilence* and *consumption* will be placed among the trophies of medical discovery.

AN

INQUIRY

CONCERNING

CUTANEOUS PERSPIRATION,

AND

THE OPERATION AND USES

OF

SUDORIFIC REMEDIES.

TO

WILLIAM HEBERDEN, M. D. &c.

LONDON.

SIR,

IN inscribing to You the following Essay, on an important subject of medical inquiry, it is not my intention to refer to the opinions which it contains, of which I am not a competent judge; but, as the representative of its Author, to express my profound respect.

It was one of the honours of his life to enjoy your correspondence; and it was an honour which he by no means failed to appreciate. Though a warm friend to his native Country, and an ardent admirer of its character, institutions and attainments, he looked with veneration on the literature and science of Europe, and was especially ambitious of maintaining an intercourse with some of the great Masters of Medicine in the land of his Fathers.

The following Essay, as well as the most of those which compose the present volume, and which were laid before the public in the pages of

the Medical Repository, were considered by their Author as fugitive pieces, which his native modesty, as well as the high standard of literary and scientific merit which he was accustomed to recognise, prevented him from collecting, and republishing himself. Had his life been spared, he would probably have executed other purposes, more useful, as well as more honourable to his memory. As it is, accept of the best offering which it is in the power of fraternal partiality to present.

I have the honour to be, Sir,
with the highest consideration,
your obedient servant,
THE EDITOR.

Princeton, N. J.
March 2d, 1814.

AN INQUIRY, &c.

IT is not intended, at present, to devote much attention to a physiological view of the cutaneous perspiration. This would lead to a great length of detail on many points sufficiently discussed in common books, and is not necessarily connected with that particular survey of the subject now to be taken. Under the term perspiration will be included all the varieties of the cutaneous discharge, as well the subtile vapour called insensible, or aëriform perspiration, as the same matter condensed on the skin into visible drops, and called sweat; because both are supposed to issue from the same sources, and are only to be distinguished, as to component materials, by the latter being mixed with the sebaceous matter of the

skin. The labours of Sanctorius, and others, to ascertain the quantity of fluid exhaled by this outlet, are proofs of uncommon diligence and perseverance; but are rendered uncertain in their result, and nearly fruitless, by inattention to the antagonizing function of the absorbents. Enough, however, has been discovered to demonstrate that great differences, with respect both to quantity and quality, arise from climate, season, weather, age, sex, temperament, diet, customs, manners, &c. The principal uses of perspiration seem to be, to preserve an equilibrium between the fluids and solids of the system, and, perhaps, to permit the escape of certain useless matters—to keep the skin moist, soft and pliable, in order to maintain its easy flexibility in the active motions of the limbs and body, and, at the same time, to preserve the accuracy of the sense of touch—and, lastly, to diminish the effects of increased excitement, by moderating the heat and excessive action of the skin, and thereby to preserve the whole system more cool and temperate.

There is scarcely a function of the human body, whose various conditions are so often mentioned as the cause of disease, and the means of recovery, as the cutaneous perspiration. Physicians, and, in imitation of them, most others, ascribe to the vicissitudes of this discharge a long train of morbid and fatal consequences; and, upon the resto-

ration or increase of it, they every day erect most important indications of cure. Much is said of the mischief of a suppression of perspiration; of the retention of morbific matter; of plethoric accumulation arising from a stoppage of the pores of the skin, producing congestion and inflammation in different viscera; of the good or bad effects of a moist and relaxed, or of a dry and rigid skin; of the benefits of determining to the surface of the body; of the efficacy of sweating, &c. And it is well known, that in many interesting and critical states of fevers, the treatment is chiefly confided to diaphoretic remedies. But many of these opinions, however venerable for their antiquity, or the number and eminence of their advocates, appear, at best, to stand on doubtful ground; or, rather, must be pronounced inconsistent with principles now generally admitted. To such persons as have renounced those opinions, and embraced a more rational and enlightened pathology on this subject, some apology is due for this inquiry. If the writer had not reason to conclude, that a large majority of the physicians and people of this country still adhere to those opinions, and that the practical influence of them is now very extensive and pernicious, he would have declined to impose the present remarks on the reader.

Cutaneous perspiration has been supposed to bear an interesting relation to two important ob-

jects—the operation of cold on the animal system—and the critical solution of febrile diseases. By many, what is called *catching cold*, and *obstruction of perspiration*, are often indifferently used as phrases of the same import; and it is commonly believed, that the former depends upon a suppression of the usual discharge of the perspirative vessels of the skin, and may be relieved by a restoration of that discharge. It is also generally supposed, that the sweating stage of fevers is critical to the hot stage; and, therefore, that promoting perspiration is a leading object in the treatment of such cases.—Passing by other views that might be taken of this subject, it will be the chief design of these observations to oppose those two opinions, which are presumed to be erroneous and mischievous.

In stating the doctrine concerning the operation of cold on the human body, it is admitted by all to be a most productive source of disease. Sydenham did not over-rate the noxious effects of it, when he asserted them to exceed the combined ravages of war, famine, and pestilence. It is also admitted, that cold, applied to the skin, in any considerable degree or duration, will always more or less diminish perspiration; but it is denied that the inflammatory diseases thence resulting are produced by this diminution.

Great variations of the quantity of perspiration are well known often to take place without any morbid consequences. Not to mention climate and season, which may be said only gradually to produce their changes, the different states of the weather sometimes suddenly lessen this evacuation, and yet no injury ensues. The urine and perspiration are always ready to accommodate each other; every person will acknowledge this, who attends to the comparative quantities of these evacuations in summer and winter; and at any time the comparison may be made, by giving to a person large draughts of any aqueous fluid, and alternately applying cold and heated air to his skin; as it will be found that the former determines the fluid to pass off by the kidneys, and the latter by the cutaneous pores. And besides the effects of temperature, the quantity of perspiration must be materially affected by different applications to the skin. Many of the ancients, and particularly the Greeks and Romans, were in the habit of applying oil to the skin, after bathing; and the Athletæ rubbed a composition of oil and wax, mixed with some agglutinating and aromatic substances, over their bodies, previous to their entering on the arena. Some nations have painted their bodies all over, as the Picts of North-Britain, who are generally said to have received their name from this circumstance, though it was certainly common to the other ancient inhabitants of Bri-

tain; and this custom, which, in a greater or less degree, is known to prevail among the savages of all countries, is still practised by the Indians of this continent, who anoint their bodies with bear's grease, mixed with a clay which resembles the colour of their skins.* The Hottentots smear themselves all over with grease. The large use of powder and pomatum among ourselves deserves to be mentioned, though the application of them, being solely to the head, cannot be supposed to produce much effect. These several practices have been more or less in use for time immemorial; they must all of them much diminish the quantity of perspiration; and yet no injury or inconvenience is alleged to have resulted. The conclusion, therefore, is unavoidable, that this discharge from the skin may be suddenly arrested, and remain so a long time, without disease.

But it is so far from being true, that inflammatory catarrh consists in a stoppage of perspiration, that it is commonly attended with an augmentation of that discharge. In the febrile state of catarrh, the cutaneous vessels possess a fulness and activity far beyond their natural condition: this is ascertained by the greater heat, redness and turgescence of the skin. Excessive energy of action produces correspondent excitement of vessels,

* Rush's Medical Inquiries, vol. i, p. 16.

which must consist in excessive oscillations, and, therefore, in increased force of the circulation of their fluids; of consequence, a greater quantity of blood is sent to the skin, and a greater quantity of perspirable matter secreted.* Nothing can plausibly oppose the conclusion, but the doctrine of spasm of the extreme vessels, mistaken for the collapse or inactivity of those vessels, arising from deficient stimulus of heat; but that doctrine is now generally relinquished as visionary, superfluous, and improbable. A further proof that this disease does not arise from obstruction of the cutaneous pores, may be derived from the inefficacy of copious perspiration in the treatment of it.

The opinion of the morbid operation of cold depending upon obstruction of perspiration, received a deadly blow from Brown's doctrine of the effect of stimulating powers applied to accumulated excitability; upon which is erected his theory of catarrh, and many other inflammatory diseases; and which explains a multitude of phenomena of the living system, otherwise unintelligible. This doctrine is founded upon a general law of animal and vegetable life. It is exemplified

* Heat of the skin, in the common temperature of the air, always denotes an increase of perspiration, whether visible or not; because the heat is produced by the increase of secretion. It follows, that a defect of perspiration can only exist when the skin is cold. Darwin's Zoonomia, vol. ii, p. 699.

by the glow of the skin after cold bathing, and the redness of the hands after holding snow or ice; by the dazzling splendour of the sun in leaving a dark room; by the pernicious effects of much stimulant food on the stomachs of famished persons; by the gangrene of frozen limbs from the sudden application of too much heat; and, lastly, by a multitude of similar occurrences in vegetable life.* When, therefore, any part of the body has been exposed to cold, it becomes liable to be much more affected by heat, or other stimuli, than before such exposure. And this luminous principle, aided by the direct or reverse sympathy existing between associated actions in different parts of the system, will, it is conceived, be sufficient to explain all the phenomena of *catching cold*, without resorting to the mysterious and fanciful doctrine of obstructed perspiration. It is not merely with the view of combating a speculative opinion, which might have been considered harmless, and undeserving of notice, that these observations are made. To relieve the imaginary stoppage of perspiration, after exposure to cold, people are often observed to betake themselves to the use of warm or spiritous liquors, to confinement in close or hot rooms, and to a weight of bedclothes, which must all greatly aggravate the disease.

* Facts of this kind may be found in the Botanic Garden, part ii. p. 31.

The second branch of the subject now recurs; viz. the relation which the cutaneous perspiration bears to the critical solution of febrile diseases. It is an opinion sanctioned by high antiquity, and which prevails at the present day, that sweating is the principal means employed by nature, and, therefore, to be imitated by art, for effecting the critical solution of fevers. It is not surprising that this doctrine should have become so prevalent, when it is recollected how commonly the coincidence is observed between sweating and a favourable crisis. The opinion of Sydenham, that fever is an effort of nature to discharge something noxious from the system; the lentor and morbific matter of Boerhaave, and the spasm of Hoffman and Cullen, have all had a share in attaching undue importance to cutaneous perspiration, and in supporting the critical subserviency of sweating to the hot stage of fevers. The mere coincidence, however, of sweating and crisis, cannot be deemed sufficient to establish the relation of cause and effect. And the doctrines of the celebrated authors just mentioned are too hypothetical, and too irreconcilable with numerous facts and phenomena to admit of defence in the present state of medical science. It is to be lamented, indeed, that many who are emancipated from the hypotheses of those authors, are still enslaved by their language and practice. Error does not always give way to

truth, when the foundation on which it rose is known to be dissolved.

It will not be difficult to maintain, that during the hot stage of fever, no stoppage of perspiration takes place—and that, even if such stoppage were admitted to exist, the matter of perspiration contains nothing whose retention, during that stage, can be supposed hurtful to the system, or whose elimination can hasten the critical solution.

An eminent pathologist* has placed the former of these positions in a clear point of light. He asserts, that the matter of perspiration is secreted in as great, or perhaps a greater, quantity during the hot fit of fever, than towards the end of it, when the sweat is seen upon the skin. He ascribes the dryness of the skin, in the hot fit, to the more energetic action of the cutaneous absorbents,† which re-absorb part of what is secreted, and to the greater heat of the skin evaporating the remainder. He refers the appearance of sweat, at the decline of the fever fit, to the continued energy of the secreting vessels, actuated by

* Dr. Darwin's Zoonomia, vol. ii, p. 19 & 20.

† I am aware that the absorbent power of the skin, except when assisted by friction, is questioned by M. Seguin, and other respectable physiologists; but the facts in support of it are so numerous and decisive, that my doubts are all removed.

all the heat of the interior parts of the system, and of the circulating blood; while the mouths of the absorbents, cooled by the external air and bedclothes, much sooner lose their increased action. And thus, after an able discussion of the subject, he concludes that sweats are not critical to the hot fit any more than the hot fit is critical to the cold fit; that they are merely the natural consequence of the decline of the hot fit, flowing from the diminished action of the absorbents, and the diminished evaporation from the skin; and that profuse sweats, at the decline of fevers, occur more frequently than copious urine or diarrhœa, because the cutaneous absorbents, exposed to the access of the external cool air, sooner abate of their increased action than the urinary or intestinal absorbents. The clear and decisive reasoning by which these opinions are defended, will be seen at large in the work referred to above. The doctrine, therefore, that the material cause of fevers is retained and shut up, during the hot stage, by the heat and dryness of the skin, will, at least, be considered as improbable.

But if it were even admitted, that the perspirable matter is confined within the system during the hot stage of fever, it cannot be legitimately inferred, that such retention becomes noxious, or that the elimination of it would produce the critical solution. This matter does not appear to be *ex-*

crementitious; if that epithet be used to signify matter acrid, corrupted, or hurtful, in case of being retained in the body. On the contrary, it is bland, inodorous, and insipid, in its natural state. And, considering how incessantly and plentifully it is emitted from the whole surface of the body, it will readily be seen how inconvenient and disgustful the society and near approximation of the bodies of men would have become, if nature had not exempted it from the fœtor and other excrementitious qualities of the urine and fæces. The diminution of it by oiling the skin, and the suppression of it by painting, &c. prove that its constant and equable discharge is not necessary to life or health. There can be no doubt that its principal uses are to preserve the softness and pliancy of the skin, and the accuracy of the sense of touch; uses implying qualities very remote from excrementitious. A great proportion of it is known to be habitually absorbed in the moment of excretion, without inconvenience or injury; and no material difference has yet been proved to exist between this matter of perspiration and the moisture which bedews and lubricates all the internal membranes of the body, and which is always entirely absorbed in a state of health. It is, indeed, true, that the perspirable matter of the lungs, apparently the same as that emanating from the skin, and also that of the axillæ and feet, sometimes emit a disagreeable odour. But this

depends so much upon constitutional and morbid peculiarities, or upon want of cleanliness, that it can furnish no sufficient ground to establish principles different from such as are here contended for.

If the matter of perspiration, whether aëriform or aqueous, be subjected to chemical analysis, it will be found to contain nothing that, in case of occasional retention, could be likely to prove prejudicial to the system. Mr. Abernethy* found the aëriform discharge from the skin to consist of carbonic acid gas and azotic gas; the former constituting somewhat more than two thirds, and the latter a little less than one third. Neither of these gases can be supposed to be noxious in the quantity retained by a temporary suppression of the cutaneous perspiration. Carbonic acid gas, and the materials of which it is composed, are always present, in considerable quantity, in the animal constitution; carbon is one of the principal ingredients of food; carbonic acid gas is plentifully found in a variety of the common fermented liquors; and it is known to be an efficacious remedy in many diseases.—Azotic gas is the most abundant ingredient in the atmosphere; in a variety of ways it gains admittance into the system, and enters largely into the composition of animal matter: and, though it may, in some instances, morbidly predominate in the body, it is certainly,

* Surgical and Philosophical Essays, part ii.

on the whole, to be considered rather as a nutritious than a noxious or excrementitious substance. In examining the perspirable matter, under the aqueous form, Mr. Abernethy observed it to be a limpid, tasteless water; after evaporation of one half, it had a very slight saline taste; no change appeared after standing many days; and the mixture of some of the most noted agents in chemistry produced no visible alteration.

If the foregoing facts and reasoning are well-founded, it must be concluded that the powers and usefulness of sudorifics in fevers, have been misunderstood, and that great abuses have arisen in conducting the practice of them. Accordingly, some of the most judicious practitioners have always inveighed, with great force, against these abuses; their remonstrances have produced much conviction, and effected many salutary restraints. In opposing the common practice respecting sudorifics, it will be understood, that reference is generally intended to that kind of sweating which is excited by forcible means, by the application of external, or the confinement of bodily heat, or by the internal use of substances directly stimulant. When excited by emetics, in nauseating or full doses, or by any other means which directly diminish action in the system, it is understood to be an effect of a different kind, and not liable to the objections now offered to the practice of forcing sweats.

Inflammatory, malignant, and pestilential fevers exhibit some of the most striking instances in which sudorific remedies have been recommended, and in which they have produced the most pernicious abuses. Experience, though ample and impressive, has, by no means universally corrected this error. And as this country, for several years past, has been unhappily subjected to epidemic fevers of this description, not only presumed mistakes in the treatment of them, but erroneous opinions also, become interesting matter of disquisition.

The ravages of the fevers just mentioned are but too well known. Without undertaking to inquire into all the modes in which a fatal termination of them may be apprehended, there are two which probably will not be controverted—1st. Organic derangement of some viscus essential to life—or, 2dly. General exhaustion of vital power, or the principle of excitability. The former is commonly effected by the violent impetus of the blood's circulation, determined to particular viscera, and accomplishing the fatal event by the instrumentality of congestion, engorgement, effusion, &c.; and the latter, by that excess of stimulation which is the sum of all the inordinate actions resulting from the disease.

No person can deny that sudorifics, operating

by means of external heat, or other direct stimulants externally or internally administered, have a tendency to produce or to aggravate such effects. The disease itself manifests a strong disposition to exert its violence in this topical derangement, even when moderated by all the remedies best adapted to allay excessive action. The delicate texture of many of the viscera is ill suited to repel an attack, from which even the strongest can scarcely escape without a fatal breach. To attempt to excite sweating by powerful stimulants, in this state of the system, without copious evacuations from the blood-vessels and bowels previously used, is as preposterous as to endeavour to extinguish flame by the pouring on of oil.

And if, instead of a fever of such destructive impetuosity, another present itself, distinguished by debility, prostration, and all the symptoms of exhausted excitability, what benefit can be expected from a remedy calculated directly to aggravate the disease, and to hurry on the fatal event? By the operation of sudorifics, not only the capillary vessels of the skin, but, through the medium of sympathetic association, all other parts of the secerning and arterial system are excited to greater action; but the smallest increase of fibrous contraction cannot be produced without a correspondent expenditure of vital power, or, in other words, a correspondent increase of the disease.

With all the saving of the principle of excitability which the most cautious management is able to effect, the feeble and exhausted frame can scarcely sustain the functions of life:—why then diminish, by an exhausting remedy, what is already too scanty, and, at the same time, all important to existence?

It is by no means, however, intended to assert that sudorifics are always useless or pernicious. On the contrary, they may be very advantageously employed to obviate the return of the cold paroxysm of fevers: they will render great service in many chronic diseases attended with general debility, and especially with cold and pale skin; they will form a remedy of great importance in many cases, by producing a transfer of excitement from the diseased part or organ, to the skin—and in a multitude of other instances not necessary to be mentioned here.

Even in fevers, sudorifics may be frequently employed with success. The cure which nature has provided for the increased exertion of the system, consists in the consequent expenditure of excitability. All cases of fevers, occurring during the prevalence of mortal epidemics, are not equally malignant; on the contrary, many instances of a mild and transient disease are observed even in the plague; and, in the yellow fever, this still

oftener takes place. On this point, it is probable, the efficacy and reputation of sudorifics will be found to rest. In all such febrile cases, therefore, as are moderate in their attack, as do not, on the one hand, by the violence of re-action, threaten local organic destruction—nor, on the other, rapidly exhaust the principle of excitability, sweating may be excited with safety, and, if used early in the disease, may often speedily terminate it with complete success. And even in fevers of greater violence, after sufficient evacuations from the blood-vessels and intestines, the operation of sudorifics may be sometimes efficacious, by gradually expending the morbid surplusage of excitability—by invigorating the absorbent function, and thereby obviating the tendency to engorgement and effusion—by the mitigation of heat arising from the evaporation—and, finally, by that agreeable softness and relaxation of the skin, which commonly attends the aqueous form of perspiration. These advantages will often more than compensate for the addition of stimulus which sudorifics impart to the system.

The efficacy of this class of remedies, in rheumatism, has been supposed to afford the most decisive and triumphant testimony of their virtue. Long experience, and a comparison of this mode of treatment with many others, leave no room to doubt the propriety of the preference given to

them. Still, however, it may be justly contended, that the operation of sudorifics, in this instance, is chiefly indirect; that their usefulness greatly depends on the preparation of the system by previous remedies; and that this example affords only ambiguous ground for extending the employment of them as a general remedy in fevers.

Sudorifics in rheumatism appear gradually to expend the superabundant excitability, by the increased action they induce; which may be effected the more safely in this manner, as the seat and disposition of the disease give no reason to apprehend a derangement of the vital organs. It is probable this remedy does much also, in this disease, by increasing the energy of absorption. If used early in the disease, without considerable previous evacuations by bleeding and cathartics, it is said evidently to protract, and primarily to exasperate the pain and other symptoms. It must, indeed, be admitted, that this remedy will often alone effect a cure, on the principle before mentioned, if the long and painful process necessary in such a circuitous plan of treatment can be resolutely persisted in. That it acts chiefly by increasing absorption, is rendered probable by its distinguished efficacy, when employed immediately after the inanition induced by blood-letting and cathartics; and this opinion is confirmed by observing that the most copious and repeated bleed-

ing and purging will not readily relieve rheumatism, unless sudorifics, mercury, Peruvian bark, or some other remedy suited to increase the energy of the absorbents, be speedily superadded. The same opinion is also further corroborated by the success of compression by bandages, in discussing any obstinate remainder of the disease, affecting the limbs, after sudorifics, &c. preceded by blood-letting and cathartics, had been faithfully employed.

Notwithstanding these concessions in favour of sudorifics, it may justly be insisted upon, that perspiration, carried to the extent of sweating, is generally, more or less, a sign of indirect debility. Few animals exercise themselves so as to induce visible sweat, unless compelled by mankind, by the apprehensions of fear, or the cravings of hunger. The debilitating effects of it are to be constantly observed in the human system. Witness the languor produced by exercise in warm weather, especially in persons unaccustomed to exertion in the heat; and yet more in labourers, in hot climates, after vigorous toil, and profuse sweating, through the day. Witness the pale and sickly countenances, and short lives, of workmen whose occupations condemn them to endure high degrees of heat, as in furnaces, glass-houses, &c. The inhabitants of hot climates, who perspire profusely, are defective in vigour, and generally short-

lived; the waste of excitability in the excessive and useless exertions of the cutaneous vessels, is probably one principal ground of premature infirmity, and of short life.*

That sudorifics cannot be usefully employed as a general remedy in fevers, is apparent from the fatal course pursued by many of these diseases, notwithstanding the most copious, universal, and continued sweats spontaneously taking place. The memorable sweating sickness, which first appeared in England towards the close of the fifteenth century, and was one of the most fatal epidemics on medical record, affords ample proof of this position.

On the whole, it may be concluded, that much of the use of sudorifics has arisen from mistaken doctrines concerning the nature of perspiration and of fever—particularly from the erroneous opinions, that the matter of perspiration is excrementitious; that its occasional obstruction is nox-

* M. Buffon made a curious experiment to show this circumstance. He took a numerous brood of the butterflies of silk-worms, some hundreds of which left their eggs on the same day and hour: these he divided into two parcels; and placing one parcel in the south window, and the other in the north window of his house, he observed that those in the colder situation lived many days longer than those in the warmer one. *Darwin's Zoonomia*, vol. ii, p. 24.

ious ; that it ought, as much as possible, to be eliminated from the system ; and that it is only carried off in considerable quantity when discoverable by sight or touch.

It may be also concluded, that sudorific remedies, especially those of more powerful kind, are, in general, highly unsafe, and calculated to augment the violence of inflammatory and malignant fevers ; and that, although they may succeed in some cases of less violence, or by a favourable concurrence of circumstances, yet they are so constantly liable to produce mischief, and exasperate the disease, that the abuse, on the whole, must be pronounced greatly to exceed the use.

After this attempt to restrict the use of sudorific remedies to such narrow limits, it may not be improper to recall the reader's attention to a substitute better adapted to the nature, circumstances, and varieties of fevers. This substitute is water, of various temperature, taken into the stomach, injected into the bowels, and applied to the surface of the body. Many endeavours have been made to bring this inestimable remedy into more common use; hitherto, indeed, without much success ; but it is to be hoped that the time now approaches when its efficacy will no longer be disdained on account of its simplicity and cheapness.

The causes of fever would be infinitely less pernicious to the system, if the fever itself were repressed in its first movement, or annihilated in embryo. The cool treatment of the small-pox gives an example of this suppression of a disease; but physicians have never yet sufficiently availed themselves of the instruction it affords. Notwithstanding all the complicated maxims and rules of medical practice, the genuine treatment of fevers is simple; it chiefly consists in reducing the heat of the system when too high, and increasing it when too low: the former will allay the existing excessive action, which threatens organic destruction of the more important and delicate viscera, or an eventual exhaustion of the principle of life; and the latter will obviate such accumulation of excitability as may endanger the system from the violence of subsequent re-action. The element of heat, one of the most universal and enlivening agents yet discovered in nature, which surrounds and pervades all bodies, and regulates many of the principal circumstances of animal and vegetable life, deserves a primary attention in the management of fevers. Excepting a few precipitate cases, where the noxious cause mounts, at once, to the source of life, and suddenly extinguishes the vital principle, it will be found that heat is the chief instrument by which the febrile poison executes its destructive work. Heat and the arterial tumult reciprocally sustain the relation of cause and effect,

and too often proceed in augmenting each other till life is destroyed.

It is by no means intended to undervalue the importance of depleting remedies in excessive arterial action; they are often indispensable; they deserve the highest confidence; and, especially as preparative for the use of other means, they must, till medicine advance some steps further, generally lay the ground-work of the treatment. But a great proportion of the depletion otherwise necessary might be spared by the adoption of the pleasant, simple and powerful application now recommended.

If, indeed, the sick could always avail themselves of the utmost efficacy of water, it might, perhaps, become as universal an extinguisher of fever as of fire. The use of cool air, in fevers, forms an æra in the history of medicine. The use of water, cold, tepid or hot, so as to suit the varying degrees of heat intended to be diminished or increased, may form an æra of greater importance. If too much action prevail in any part, or in the whole system, it may always be speedily reduced by water of appropriate temperature. If chilliness and torpor are found in particular parts, or in the whole, the partial or general application of water, of proper warmth will be one of the most direct and expeditious means of procuring relief. In

most fevers, the action of the sanguiferous vessels is plainly either excessive or deficient; and so close a dependence has this morbid action upon the heat of the body, that a steady and efficient regulation of that heat, lowering excess and supplying defect, would certainly bring that action to a proper point, and there render it stationary.

Cool air has been justly deemed an invaluable remedy in fevers; but air is comparatively a bad conductor of heat. Irreparable mischief may be produced before it can adequately operate; and, in some seasons and countries, it would be impossible to obtain it of the requisite degree of coldness. Water, eight hundred times denser than air, and conducting heat with proportionable celerity, must be much better adapted to produce a powerful effect in the system. The force and rapidity of the operation of cold water may be estimated by considering the consequence of plunging a person, in perfect health, whose excitement is supported by every due degree of stimulus, naked, into water of a degree of cold at or under the freezing point. Life would be almost instantaneously extinguished. And if this extreme effect could be so suddenly induced, is there not sufficient warrant to assert, that all inferior effects might be produced by a cautious and graduated application of the same remedy?

There is good reason to believe that hot weather and febrile diseases increase the heat much more upon the surface than in the internal parts of the body, where the temperature is nearly stationary. Mr. Hunter's experiments on the heat of animals, as existing in inflammation of various parts of the body, and measured by the thermometer, establish this fact.*

The skin is more susceptible of increased heat, in diseases, than any other part, because, in a state of health, it is actually cooler, and, of consequence, possesses a greater accumulation of irritability than the internal parts. The comparative coolness of the skin must be ascribed to its exposure to a medium commonly much cooler than itself, and to the quantity of heat continually absorbed and borne off by the evaporation of the perspirable matter. And perhaps it may be true, with respect to the cold as well as the hot stage of fever, that the skin is principally and extraordinarily affected.

If, then, it be admitted, that the operation of heat is so important and mischievous in febrile diseases, and, likewise, that this excessive heat is chiefly exerted upon the superficial parts of the

* Hunter's Treatise on the Blood, Inflammation, and Gunshot Wounds, vol. ii, p. 20.

body, a great additional encouragement is derived to rely upon the efficacy of the application of water.

But, in order to give the sick the utmost advantage of this remedy, and to avoid laying too much of the stress of its operation upon particular stages of febrile affections, these affections must be surveyed in their utmost latitude, and appropriate degrees of heat or cold applied to the skin and other parts at seasonable periods. For example—the application of heat, in the torpid or cold stage of fever, is as important as that of cold in the hot stage; and, by attending promptly to the former, more efficacy and less difficulty will be found in the latter. By neglecting the former, the disease strikes a deeper root, time is lost, and much more energy, or rather violence, is requisite in the subsequent measures.

Not only warm water, but, perhaps, other external stimulants, might be usefully employed in arresting the cold stage of fevers: among these may be reckoned alcohol, spirit of ammonia, æther, &c. which may always be kept ready for immediate use, and whose application to the skin could be productive neither of trouble nor danger. The doctrine of the hot being a natural and necessary consequence of the cold fit, and the com-

mon appearance of proportion between them, in extent, degree or duration, give countenance to the use of this kind of remedy. The usefulness of arterial compression, as recommended by Mr. Kellie,* in lessening and shortening the cold stage of intermittents, and, by consequence, the whole paroxysm, suggests another remedy of similar kind, and strongly confirms and illustrates the general principle.

With respect to the precise temperature of water, applied externally or internally at the different stages of a febrile paroxysm, alternately to restrain defect and excess of heat, much is probably yet to be learned. In general, it may be observed that a degree of heat from 96 to 100 of Fahrenheit's thermometer, will be necessary in the stage of chilliness; and, in the hot stage, 95, or any inferior degree, as prudence may dictate, will produce a cooling effect. The use of very cold water will probably be seldom necessary or advisable; as too sudden transitions from high to low temperatures are not requisite to produce the desired effect, and, in some cases, may possibly be productive of mischief.

The mode of applying water of various temperature to the skin of sick persons, without

* Duncan's Medical Commentaries, vol. xix, p. 155.

obliging them to leave their beds, and without inducing the least fatigue, opens a wide range for the exertion of ingenuity and invention. Sheets of oiled silk might probably be used for this purpose with great advantage; and the application of blankets and sheets, or body-linen, previously wrung out of water, at the same time causing a proper degree of ventilation to be maintained, would regulate at pleasure the heat of the patient's skin.* Damp or wet linen and sheets would, in this case, produce exactly the same effect, employed as a remedy, which they produce in bringing disease upon healthy persons: the different relative circumstances of the body, in health or in fever, form a substantial difference, and render the same application, in one case, highly pernicious, and, in the other, highly salutary.

The appropriate temperature of the water, varied with every change in the condition of the system, and always regulated with the greatest exactness of graduation, will supersede the necessity of many cautions and restrictions in the application,

* Examples of the remarkable efficacy of the external application of water may be found in Bruce's *Travels to discover the Source of the Nile*, vol. iii, p. 33; in Dr. Jackson's *Treatise on the Fevers of Jamaica*, p. 270; in Dr. Rush's *Medical Inquiries and Observations*, vol. iv, p. 92; and especially in Dr. Currie's *Medical Reports on the Effects of Water, &c.* Liverpool, 8vo. 1798.

concerning the particular stage of the paroxysm, the chilliness or heat of the skin, the presence of perspiration, &c. which would demand much minuteness of detail, and exceed the limits prescribed to this inquiry.

REMARKS

ON THE

EFFECTS OF ABSTINENCE

AT THE APPROACH

OF

ACUTE DISEASES.

TO

VALENTINE SEAMAN, M. D.

Professor of Anatomy, Physiology and Surgery, in the Medical Institution of the State of New-York.

DEAR SIR,

THE long and uninterrupted friendship which subsisted between You and the Writer of the following Essay; and the spontaneous and fraternal tribute of respect which You paid to his memory, ought never to be forgotten by his surviving relatives.

Allow me, in this page, to record an humble memorial of a friendship which I have every reason to believe was highly valued on both sides; and to express the respectful and grateful sentiments with which I am, dear sir,

Your sincere friend,
THE EDITOR.

Princeton, N. J.
March 21, 1814.

REMARKS, &c.

THE following fact seems to deserve more attention than it commonly obtains. In a district of the United States, distinguished for the prevalence of the epidemic diseases of summer and autumn, it is often asserted, by sensible and accurate observers, that they are accustomed to obviate the attack of fevers, apparently approaching, by rigid abstinence from food. This abstinence, begun as soon as they perceive the feelings of indisposition, usually known to be the forerunners of fever, is continued till such feelings cease, till appetite is restored, and generally, indeed, till the calls of hunger become importunate. On different occasions, this process is of various duration; sometimes occupying twenty-four, thirty-

six, or even forty-eight hours, according to the nature and exigencies of the case. The success of this regimen is commended by such as have experienced it, in stronger terms than it would be proper here to repeat, and, perhaps, stronger than the reality of the case can justify. It is not, however, difficult to perceive that much fallacy may be mingled with this sort of experience. Complaints, similar to these in question, are often transient, when every attention to regimen has been omitted. What criterion, then, shall be resorted to, for the purpose of distinguishing these fugitive symptoms, originating from indigestion or some still more fleeting cause, from the serious ones, which, if neglected, will usher in a severe disease? This ground of uncertainty is freely admitted. But still it remains probable, that there is much truth in the observation, particularly when we call to mind the number, sagacity, and concurrence of the observers, the accuracy of personal experience, and the multiplied instances which epidemic sickness affords for comparison and discrimination. And I am further inclined to give credit to this observation, because it appears to depend upon principles of the animal economy, which are of great importance, and admit of an easy explanation.

Although the observation above-mentioned comes, in the present instance, from a popular

source, the effects of abstinence, in obviating the approach of acute diseases, have not escaped the notice of the most eminent physicians. In the writings of Hippocrates, we perceive the strong impression he had received on the subject. Sydenham is still more explicit. In his account of the continued fever of the years 1673, 1674, and 1675, considered by Dr. Cullen as a variety of Synocha, or inflammatory fever, it is asserted that he often cured this, as well as other fevers, in the beginning, merely by directing diluents, and prohibiting every kind of aliment. Thus he relieved his children and intimate friends (to use his own words) *by making them fast strictly for two or three days.*—And, besides medical authority, we may also adduce, in favour of this mode of preventing diseases, the recommendation and practice of many men of letters, who have adopted it with the greatest zeal. The sedentary lives of such persons, diminishing keenness of appetite, and augmenting the burden of repletion, and their experience of higher intellectual power in a somewhat diminished degree of bodily vigour, may, perhaps, account for their attachment to this remedy.*

* Among many examples of literary persons, who have practised rigid abstinence, and derived great benefit from it, I shall mention the late Rev. Dr. Campbell, Principal of Marischal College and the University of Aberdeen, who died in 1795, aged 71 years. "He had, all his life, a rooted

The advantages of total abstinence, at the commencement of acute diseases, bear an evident relation to the effects of a temperate and abstemious diet, during the prevalence of fatal epidemics. The long experience of countries subject to the visitation of pestilential diseases, and of several parts of our own country, under the pressure of

" aversion to medicines. He got the better of every ailment, " by a total and rigorous abstinence from all kind of sustenance " whatever; and it was not till he was attacked by an alarming " illness, about two years before his death, that he was per- " suaded by his friends to call in medical aid. What nature " could do, she had all along performed well; but her day " was over; and something of art became necessary.—Then, " for the first time, he owned the utility of medical men, and " declared his recantation of the very mean opinion he had " formerly entertained of them and their art."—London Monthly Mag. vol. i, p. 344.

Whatever mistakes may appear in such opinions, it is interesting, in all the concerns of health and diseases, where facts and the unbiassed examination of them are so important, to observe the conclusions formed by discerning men, who are, at the same time, divested of the prejudices incidental to the medical profession. While on the one hand, physicians possess superior advantages in acquiring knowledge of the nature and cure of diseases, on the other, they are peculiarly exposed to certain sources of error. Systems collect, combine, generalize, and interpret facts; but they also, sometimes, distort and mutilate them. Hence the common sense of mankind, and more especially the discernment of vigorous minds, is a necessary corrective of that obliquity with which even simple objects are sometimes beheld by the systematical devotee.

recent or existing calamities of a similar kind, places the benefits of this diet in a strong light. Not only the caution of individuals, but the habits of nations may be distinguished in the comparative exemption from diseases, which they derive from abstemiousness. The French and Spaniards in the West-Indies, and in other warm climates, avoiding the use of ardent liquors, and retaining their usual habits of thin and spare diet, are observed remarkably to escape the dangers incidental to such situations; while the British, carrying with them, wherever they go, not only their plethoric and vigorous habits, but likewise their national predilection for a gross and stimulant plan of living, suffer all the havoc of those baneful countries. From every tropical region similar examples might be brought; and wherever experience has enforced accommodation to the inclemency of a hot climate, we observe people relinquishing all such excesses and grossnesses of diet as can only be safely indulged in the higher latitudes.

The importance of the functions of the stomach in the animal system explains the powerful effects of abstinence and repletion. No animal can exist without a stomach. Deprived of brain, heart and lungs, the cold-blooded animals have been observed to live and move for several hours. The languor of their circulation, their occasional ex-

ercise of respiration, and a portion of excitability singularly inherent and inseparable, enable them, while the energies of the stomach continue, to retain life without the aid of those important organs. And, even in the more perfect animals, the functions of the stomach hold so distinguished a rank, that life has remained for some time independently of almost every other part of the body. The range of sympathy which it possesses with other parts, remote as well as contiguous, is so extensive, that it is emphatically stiled the index of the whole system. Besides its importance as the principal organ of assimilation, we observe a great number and variety of effects, salutary, morbid or deleterious, produced by different substances taken into it, and operating on its sensible and delicate texture. In febrile diseases it affords some of the most interesting and satisfactory indications concerning their accession, progress, remission, crisis, and cure.* And, finally, it possesses singular mobility, or, in other words, a promptitude to suffer more defect or excess of excitement than any other part of the system—Such is the organ—such the powerful changes in it, and thence in the whole system, which we propose to excite by occasionally depriving it of the accustomed stimulus of aliment.

Acute diseases invade the body in various

* Medical Commentaries, vol. xviii, p. 94.

ways; sometimes suddenly; oftener by gradual approach: when suddenly, they admit not of prevention by abstinence. It is probable much more may be learned by future observation than is at present known, concerning the distant approach of these diseases, and, consequently, the means of averting the danger they produce. In the mean time, it would be fortunate for mankind if they were disposed to avail themselves of all the notices of approaching illness already well understood. During the prevalence of epidemic diseases, these symptoms should be watched with especial attention; as, upon the proper management of the interval between them and the actual formation of the disease, the prevention of the evil, and the safety of the patient will often depend.

It would be no easy task, nor is it necessary, to point out all the symptoms which notify the approach of acute diseases. There seems to be so much reason to ascribe indicial functions to the stomach, that we should generally look to that viscus for the earliest notices of impending mischief. Accordingly, some accurate observers mention a peculiar, disagreeable affection of the stomach, difficult distinctly to describe, compounded of nausea and anxiety, as generally the first morbid sensation. Then follows heaviness, lassitude, languor, debility, oppression, restless-

ness, head-ach, or giddiness, pain in the back or limbs, perversion of taste, flatulency, irregularity of the intestinal discharge, loss of appetite, or sometimes great keenness of it, low spirits or unusual vivacity, wakefulness or unusually sound sleep.* When such symptoms as these occur, during the prevalence of an epidemic disorder, or after exposure to any of the known causes of acute diseases, it will be advisable to abstain from all aliment for a proper length of time, and if this step should be found unavailing, to adopt such farther measures as the nature of the case may require.

Sensations which precede the invasion of acute diseases, it is well known, are often mistaken for symptoms of indigestion, and treated accordingly. The mischief which must ensue from the use of ardent spirits, the popular remedy of indigestion, at the approach of a malignant fever, or any inflammatory disease, will be readily seen.

All alimentary matter, especially of the animal kind, taken at the commencement of an acute disease, is fraught with mischievous consequences. The powers of digestion are either impaired or totally suspended. No assimilation nor nou-

* The stimulus of contagion or miasma, in certain degrees of force, may evidently produce exhilarating as well as soporific effects.

rishment can take place. The stimulus of the food, immediately on its arrival at the stomach, will be added to the morbid stimuli, previously operating with pernicious violence. Tottering under its present load, the system is forced to sustain new burdens. But this is not the only bad effect of receiving food under such circumstances. The alimentary matter, unsubdued and unassimilated by the powers of digestion, placed in a situation where it must undergo a rapid and noxious decomposition, will form a mass of corruption and acrimony, generating and diffusing its poison throughout the whole tract of the stomach and bowels. Can we wonder, after this, to hear complaints of flatulency, oppression, and anxiety about the præcordia, pains in the bowels, diarrhœa, &c. in the course of the disease?

Having thus stated some of the ill consequences of food received into the stomach at the commencement of acute diseases, it becomes necessary to avoid these consequences by abstinence or evacuations. Much has been said, by practical writers, on the efficacy of emetics, exhibited at the approach of malignant fevers; and there is reason to assent, in general, to the truth of these assertions. But, we believe that abstinence may often be advantageously substituted for emetics or other evacuants in such cases, and as their effects correspond in several particulars, and seem to

throw light on each other, we shall venture to consider them in a comparative point of view.

Emetics produce the following effects—they empty the stomach and the upper intestines—they accumulate excitability in these organs*—they increase the action of the cellular, pulmonary and cutaneous absorbents—and they promote perspiration.†

* That emetics accumulate excitability, is proved by their often stopping spontaneous vomiting, by their strengthening digestion, and by increasing the action of the cellular, cutaneous, and pulmonary absorbents, during their operation. Zoonomia, vol. ii, p. 57.

† There are, indeed, other considerable effects of emetics, such as agitation and compression of the abdominal and thoracic viscera, thereby increasing the force of circulation in them, and promoting their several secretions. But these effects appear to hold but little importance in preventing the attack of fevers.—Dr. Darwin, "in his theory of fever, "supposes that emetics, early administered, sometimes cut "short the disease, by causing a retrograde motion of the "lacteals, and a consequent diminution of the matter of con- "tagion. Few explanations in his work are of so gross and "mechanical a cast. We conjecture that the blow must be "given to the stomach before the subtile matter is absorbed "by the lacteals: we should not be surprised if these ves- "sels were rendered incapable of action: and does it not "appear more consonant to other parts of the author's rea- "soning, to suppose that vomits, in these instances, coun- "teract the exhausting effect of the poison, by accumulating "the sensorial power of the organ?" See Analytical Review for Feb. 1797, p. 139.

It will not, I conceive, be difficult to demonstrate that abstinence produces effects nearly similar. That emptiness is one of its consequences, must be too obvious to require proof or illustration—and that excitability is accumulated by withdrawing, for a time, from any part of the living body its accustomed stimulus, is likewise a fact too plain and simple to be denied. When food and drink are withheld, no person will doubt that the action of the lacteal and lymphatic absorbents of the stomach and bowels is proportionably diminished; and it appears to be a law of the animal economy, that any diminution of the action of these branches of the absorbent system will be compensated by a correspondent increase of energy in the cellular, pulmonary, cutaneous, and other absorbents. Proofs of this fact might easily be multiplied. The effect of *fasting* in exciting a very copious discharge of urine, in dropsy, exemplified in the case of the celebrated Dr. Johnson,* as recorded by Sir John Hawkins, is directly in point. Dr. Rush, who quotes this case, informs us he has tried the same expedient, in dropsies, both in private practice, and in the Pennsylvania Hospital, and found a confirmation of the fact.† With respect to the increase

* Life of Dr. Johnson by Sir John Hawkins, page 499, 500.

† Med. Inquiries and Observ. vol. ii, p. 180.

of perspiration by abstinence, it would, perhaps, be more correct to say, that it prepares the way, or rather creates a disposition in the secreting vessels, on the surface of the body, to be more powerfully acted on by diaphoretic medicines. This class of medicines are all said to exert greater effect, if given early in the morning, about day-break, than at any other time; and this must doubtless be ascribed to the increased excitability of the whole system, at that time, accumulated during sleep. That a similar accumulation of excitability ensues from withholding the customary stimulus of food, cannot be called in question; and it is equally clear that this accumulation is especially produced in the secreting vessels of the skin, owing to the well known sympathy between them and the stomach. It follows then that any diaphoretic remedy, and even very gentle ones, exhibited in this condition of the system, assisted by moderate warmth, will act with increased energy, and this augmentation of action will be commensurate with the previous augmentation of excitability. Every one must have remarked the heat and glow of the skin, when any stimulant matter is taken, after long fasting; which exactly corresponds with a glow and heat of the skin immediately succeeding the action of vomiting.

But, however useful emetics may be thought

at the approach of fevers, they are liable to many exceptions. Some persons, from peculiarities of conformation, or other causes not well understood, take them with great difficulty; in many conditions of the body they are unsafe; and in many cases of incipient fever their operation might be followed by inconvenient or detrimental consequences.

Abstinence, the substitute here proposed, is fitted for more general application, and possesses the rare advantage of being adapted to obviate the approach, or, at least, to abate the violence, of almost all acute diseases. The safety of it can scarcely be questioned in any case. If an inflammatory disease be coming on, few will doubt the propriety of total abstinence for some time, and a restriction to the mildest diet, when nourishment becomes necessary. To fevers which are the offspring of miasma or contagion, this treatment is equally applicable. These poisons, whatever degree of similarity or variety may be attached to them by different opinions, are generally supposed to affect the system by a stimulant operation, and, in arranging the means of prevention, may, at all events, be confidently associated. There seems much ground to suppose, that they ordinarily obtain introduction by the mouth, and, conveyed by the saliva, soon find a lodgment in

the stomach.* By abstinence that organ is enabled to maintain a more vigorous combat; to rally all its forces; and, finally, by dint of habit, to disarm the noxious intruder. By indulging repletion at such a moment, by heaping alimentary upon morbid stimulus, the energies of the stomach must be in hazard of being overwhelmed, of sinking into indirect debility, and thereby giving deep root to a violent disease. Abstinence is also one of the most *convenient* means of preventing diseases. No confinement is necessary, no interference with the ordinary occupations of life. If the apprehensions which gave rise to it prove groundless, no trouble nor injury is sustained; but the system, set free from an accustomed stimulus, feels a lucid interval, not often experienced by the votaries of luxury, and afterwards returns to the charge with redoubled gratification. If the character about to be assumed by the disease were of a moderate kind, the abstinence alone we suppose to be sufficient to strangle it in the birth; if more malignant, and our easy precaution should prove insufficient, some advantage, and not a trifling one, will at least have been gained. The stomach will certainly be in a better condition for the reception of other remedies.

There is scarcely any disease in which the em-

* Gardiner's Observations on the Animal Economy, p. 196.

ployment of abstinence for some time, and afterwards of a mild, cooling, and spare diet, is so signally beneficial as in catarrh. If the aid of this simple treatment were not so much neglected, we should not so often see catarrh precipitated into peripneumony, or protracted in phthisis.*

To relieve the debilitated state consequent upon intoxication with vinous and spirituous liquors, nothing is better adapted than withholding for some time, all aliment. This remedy is the more necessary, as acute diseases are often introduced on occasions of intemperance, and a malignant and fatal character apparently imparted to them from this cause. In cases of this sort particularly, and probably in most others, where abstinence is recommended, the good effects of it will be increased by frequent draughts of cold water, and even of iced water, if cautiously used. But the cases of topical inflammation should be excepted in this observation.

Chronical vomitings of great obstinacy sometimes occur, in which, it is probable, a total prohibition of food and drinks, for some time, would afford relief, if any adequate mode of nourishing the body, otherwise than by the stomach, could be devised. Injections and baths of nutritive

* Medical Observations and Inquiries, vol. iv, p. 289.

fluids, or the transfusion of blood from another animal would be most likely to answer this purpose.

It is probable that, in some cases of fever, the stomach may be so affected by the virulence of contagion, as to become completely paralytic, and unfit for the reception of food or medicines. In such case, every thing received by that organ, if not pernicious, must be entirely useless; and, perhaps, the best means of restoring its power would consist in leaving it, for some time, in a state of perfect emptiness and quiet, and, meanwhile, conveying nutriment and remedies into the system by other channels.

In diseases of great direct debility, abstinence may frequently prove an excellent remedy. The reduction of excitement in the stomach, far below the natural standard, may often be necessary, in order to prepare for the invigorating operation of succeeding stimuli, which the extensive sympathies of that organ are so well calculated to propagate over the whole system.

Two cautions will obviously occur in the employment of this regimen—first, that constitutions of uncommon feebleness and delicacy, or such as are broken by intemperance, or the decline of life, can safely sustain it only in a moderate de-

gree—and, secondly, that it be not allowed in the case of violent diseases, to usurp the place, and lead to the neglect or postponement of more active remedies. The approach of fevers may be accompanied with such signs of malignity, or the nature of the prevailing epidemic may suggest such well-founded distrust of any apparent mildness of invasion, as to render abstinence alone too weak, too dilatory, and too uncertain, for a moment of such urgency. Still, however, it may be maintained, that all other remedies will derive additional force and efficacy from the co-operation of this.

Amongst all the effects of emetics and abstinence, at the approach of malignant fevers, none deserves more attention than the increased quantity of excitability which they collect. The doctrine of the effects of stimulant powers, applied to accumulated excitability, is so luminous and philosophic, rests upon so broad a basis, and is of such important and extensive application, in the conditions both of health and disease, that it can scarcely receive too much consideration. Proofs and examples of this law of animal nature are continually before our eyes. We observe it in the effects of the cold bath—our eyes experience it in passing from a dark apartment to light—and still more violently in the effects of too much food or warmth allowed to persons previ-

ously subjected to famine or frost. Diseases also furnish us with familiar examples of the same law, in the powerful effects of the Peruvian bark, after the previous exhibition of emetics, and the redoubled efficacy of opium in relieving pain, when it has been preceded by venesection and a cathartic.

On this grand principle it is easy to perceive to what extent, and in what various degrees, abstinence may be employed as a preventative and a remedy. In the first place, it will diminish excitement, and so far lessen the amount of stimulant power, upon which the attack of febrile diseases so universally depends; and, secondly, by means of the excitability thus collected, the foundation will be laid for a more effective and vigorous excitement afterwards, when it shall be found consistent with safety. At the approach of an acute disease, the abstraction of a few meals may thus either repel it altogether, or greatly abridge its violence; and when that is accomplished, the renovated stimulus of aliment, so congenial and salutary, will be sufficient to complete the cure. Common articles of diet are thus rendered active remedies. Powerful medicines, in too large doses, or unseasonably exhibited, are converted into poisons. Just so with respect to the mildest aliment: a certain condition of the system, viz. the fasting condition, changes it into

an active stimulus; and another, viz. the starving condition, exalts the ordinary quantities of food to a deadly poison. Arsenic does not more certainly induce fatal inflammation and gangrene in the stomach, than mild food, taken by a famishing person, in quantity disproportionate to the collected excitability. Stimulants may not only be suited to the state of the system, but the system itself may be adapted, in this manner, to the force of stimulants. Such a remedy, therefore, as abstinence, possessing so great a range of power, so simple and so accommodating, if it be not allowed to supersede many others, certainly cannot be despised.

If the art of preserving health, and prolonging life, chiefly consist in a frugal and sparing use of stimuli, and adapting them, with caution and skill, to the fluctuating circumstances of the vital principle, we shall surely find still stronger motives to apply this doctrine at the approach and in the treatment of diseases, when noxious powers of such preternatural violence invade the body, baffle every remedy, and stimulate it to death. The regulation of this vital principle, here denominated excitability, the preservation of it when present, and the restoration of it when deficient, the restraint of excitement within the bounds of moderation, the prohibition of all wasteful and undermining excesses, will probably, hereafter, at some

more enlightened æra of medicine, form a system of rules for the management of health, and the prevention of diseases, for the enjoyments of sense, and the refinement of intellect, which, instead of the present feverish dream of human life, will present a consummation of improvement and happiness, which we now ascribe to superior beings.

I have thus undertaken to examine a noted popular observation, to inquire into its truth, and to demonstrate its consistency with the most established principles of the animal economy. If I do not mistake, it has been proved that abstinence will be often a complete, generally an useful, and almost always a safe means of obviating the approach of acute diseases. And, in a word, if it were possible to offer to mankind a maxim of universal application to the treatment of incipient fevers, in all their variations and circumstances, I should be inclined to hazard the following aphorism: *When symptoms, denoting the approach of acute diseases, are discovered, abstain, for a proper length of time, from all aliment.*

OBSERVATIONS

ON THE

PHENOMENA, CAUSES, AND TREATMENT

OF

SEA-SICKNESS.

TO

DAVID RAMSAY, M. D. &c.

CHARLESTON, SOUTH CAROLINA.

DEAR SIR,

YOUR friendly correspondence with the author of the following pages; Your repeated approbation of his literary labours; Your patronage of the medical work of which he was so long one of the Editors; and especially Your own large and honourable additions to the literature and science of our Country, have forcibly directed my views to You, as one of the Patrons of the present volume. Allow me, therefore, with sentiments of the highest respect, to prefix Your Name to the Essays which close the collection.

May the period be distant which shall add You to the list of those Masters of the Healing Art, who have found that art unavailing when "their days were numbered!" and when it shall arrive, may it find you prepared for that Kingdom where disease and death shall be forever unknown!

I have the honour to be, Sir,
Your obedient servant,
THE EDITOR.

Princeton, N. J.
April 6, 1814.

OBSERVATIONS, &c.

THIS disease affects most persons on their first going to sea. It is of various degree and duration in different instances; frequently slight and transient; sometimes severe, protracted, and excruciating. In general, it continues only for the first day or two of a voyage, produces little trouble or confinement, and is attended with no danger. In a few cases it begins at the first moment of embarkation, harasses the patient with incessant tortures for weeks and months, or, at least, recurs with violence at every return of bad weather, and only releases him from his sufferings at the end of the voyage. It has likewise happened, on some occasions, that the symptoms of sea-sickness have not disappeared even on the arrival of

the vessel in port, and the patients going ashore. And examples have not been wanting of such derangement of the system, by the violence and obstinacy of this disease, as gradually to induce fever of the worst kind, attended with loss of all retentive power of the stomach, and terminating in death.

Sea-sickness is more apt to occur in the open sea, where the waves have an extensive and uninterrupted course of motion, than in gulfs, bays, channels and rivers. It is chiefly troublesome when the sea is much agitated by wind. The vibrating motion of a vessel, from stem to stern, and from stern to stem, which is called *pitching*, or that from one side to another, called *rolling*, produces the severest degrees of giddiness and sickness. These motions are observed when the vessel is going directly before the wind, or when a calm suddenly succeeds a storm, and not when the wind blows obliquely, or on the *quarter*, for then the succussion which the ship undergoes is much diminished.

In small vessels, on which the slightest movement of the waves make an impression, this disorder is more likely to take place than in very large ones, such as ships of war, or merchantmen of great burden, deeply laden, which, comparatively, undergo little disturbance. It has been

also observed, that where habit produces accommodation to the motions of one vessel, removal to another, whether from a larger to a smaller, or from a smaller to a larger, will sometimes again awaken the disease.

Aged persons are seldom affected with the disease, in comparison of those at the younger and middle periods of life. Those of a dark complexion, in general, suffer less than such as are fair: and infants are commonly altogether exempted.

As a description and an example of the sufferings sometimes endured from this disease, the following account is given by a medical gentleman, of his own case, in the voyage of the embassy from the King of Great Britain to the Emperor of China. "He felt," he said, "at first, a sickness in his stomach, followed by a retching, when he threw up whatever he had taken into it; then green, and afterwards yellow bile; to which succeeded a thick, mucilaginous, insipid fluid, which he considered to be the gastric juice; and, lastly, grumous blood. Before he vomited the last, he felt a sensation as if his stomach were twisting together, and which motion, he supposed, produced the hæmorrhage. Had the blood proceeded from the lungs, he judged it would have been spumous, or mixed

with air-bubbles (and florid.) He felt constantly a nausea in his mouth; his salivary glands swelled, and the saliva became thickened and vitiated. His mind grew indifferent to all things, either past or future, and even to his existence. Regret and hope were equally extinct within his breast. His head felt light and sore, and as if its sutures were separated from each other. It likewise ached; and he had alternate sensations of violent heat and chilling cold. He thought he felt the inversion of the peristaltic motion, and its actual tendency upwards from the intestines to the mouth. Whatever he swallowed he returned, with no alteration of it in the stomach. The bare mention of food, solid or liquid, was loathsome to him."*

CAUSES OF SEA-SICKNESS.

Sea-sickness† begins with giddiness and vertigo, which not only demand attention in describing the order of the symptoms, but likewise afford a clue to trace the nature and causes of the

* Staunton's Account of Lord Macartney's Embassy to China, vol. i, p. 145 and 146.

† In this Inquiry into the causes of sea-sickness, I have adopted the theory of Dr. Darwin. I have also made use of several of his facts and illustrations, as they are the most familiar and apposite of any which are now within my reach.

[*See Zoonomia, vol.* i, *sect.* 20.

disease. This species of vertigo originates from disordered action of the organ of vision, produced by the instability and unaccustomed movements of all objects upon the water. That such is the cause of it, is proved from its being excited in some people, though in a less degree, by gazing on the fluctuations of a river (provided no fixed objects appear within the sphere of distinct vision,) or by the sight of a large revolving wheel, while the vertiginous persons themselves are perfectly at rest, and, by shutting their eyes, can instantly arrest this troublesome sensation. Another proof that vertigo may arise from the effects of the instability and indistinctness of visible objects on the eyes, is derived from our dependence upon the steadiness of such objects in walking and in balancing the body. We constantly determine the distances of the objects which we approach by our eyes, and, by observing their perpendicularity, regulate our own: hence no one who is hoodwinked can walk in a straight line for an hundred steps together. And when children are learning to walk, it is easy to observe the efforts they make to adjust their perpendicularity by surrounding objects, and how instantaneously they fall, when either their attention is unexpectedly called off from this adjustment, or when an object which had caught their eyes, and had been hitherto stationary, is made to undulate. This power of balancing the body

by the view of surrounding objects is acquired with difficulty, maintained solely by habit, and may be readily impaired or destroyed by disuse; for persons who have been long confined to bed are found to reel and stagger in their first attempts to walk, and only by patient endeavours recover their former steadiness. The principle of our dependence upon vision in balancing the body by external objects, and of the tendency to vertigo, whenever that sense is impaired by disturbance or disease, is still further illustrated by the vertiginous sensations which often affect elderly persons when they begin to suffer dimness of sight, and which are frequently relieved by the use of spectacles, or, at length, by acquiring the habit of adjusting perpendicularity by objects less distinctly seen.

That distinctness of visible objects which is requisite to the balancing of the body with steadiness, and to the prevention of vertigo, may be diminished or destroyed in various ways, all of which seem to throw light upon this subject. Objects may become indistinct, 1st, by reason of their *smallness* and *similarity* to one another. Many persons become dizzy in a room hung with paper coloured with small and similar figures, where the eyes do not readily find a resting place, nor distinguish their movements in continually passing from one figure to another. But by af-

fixing to the wall a sheet of white paper, or by drawing figures of a larger or more diversified size, the giddiness becomes no longer perceptible. It is for the same reason that vertigo is produced, in some, by passing over a plain covered with snow, without trees or other eminent objects. 2. Objects become indistinct, and the beholder vertiginous, on account of their *distance*, and the *direction* in which they are seen. It is for this reason that many become giddy in ascending lofty heights, or in looking down a deep precipice. Objects, placed at such a distance, are beyond the sphere of distinct vision, and, therefore, unsuitable to regulate our perpendicularity. The debilitating impression of fear must likewise be admitted, in this case, to produce a share of the effect. 3. The distinctness of objects is lost, and giddiness produced, by their *unusual* and *excessive motions*. Instances of this sort are very numerous, such as the view of a great cataract, of a large revolving wheel, &c. the first attempts to ride on horseback, to mount a camel, an elephant, &c. riding backwards in a coach, swinging, riding in a sleigh, skating, turning swiftly round on one foot, and more especially in the disease now under consideration.

The effect of these motions upon the organ of sight is also much increased by the *ocular spectra* of objects remaining some time upon the retina,

thereby exceedingly augmenting the disturbance of the eyes, and adding to the confusion of the vertiginous person. When any one turns rapidly round till he becomes giddy, and falls upon the ground, the spectra of circumambient objects continue to present themselves in rotation, and he seems to behold such objects still in motion. These spectra appear to be a continuation of the motions of the optic nerve, which had been excited by the objects which they severally represent. They are apt to remain, to recur, or to be prolonged, in proportion to the degree of debility induced; hence they must greatly aggravate the more violent cases of sea-sickness, and produce an infinite number of deceptions of the sight and of imagination. Their effects are well known in fevers of debility, by producing the symptom called *muscæ volitantes*, &c.

Besides the vertigo of disordered vision, it is probable sea-sickness is generally produced, in part, by another species—that of disordered touch or feeling—and which has been called *tangible vertigo*. When a blind person turns round, or when one who is not blind revolves in the dark, a vertigo is produced belonging to the sense of touch: for his feet now touch the floor in manners or directions different from those they have been accustomed to; and, in consequence, he becomes bewildered as to the situation of his body in rela-

tion to the floor, loses his perpendicularity, and is rendered giddy. This combination of visual and tangible vertigo, in producing the phenomena of sea-sickness, seems to have escaped the attention of those who have treated of this disease. Sailors remark, that such persons as can soonest accommodate themselves to the ship's motion, and acquire the habit of standing and walking uprightly, without reeling to and fro, are least distressed by sea-sickness, and most speedily recover. The instability of visible objects, and the reeling induced in the beholder, reciprocally increase one another.

Having thus mentioned some of the various modes in which vertigo may be produced by a disordered and excessive action of the organ of vision and of touch, particularly such as arise from the rotation, undulation, or other irregular and unusual motions of external objects, as well as of the beholders, I am, in the next place, to show in what manner vertigo produces the nausea and vomiting which quickly ensue.

It does not appear, at first view, how nausea and vomiting proceed from a disturbance of the action of the visual organ. But when it is recollected that violent giddiness, the immediate result of such disturbances, precedes and occasions these perversions of the alimentary canal, the difficulty vanishes. Vertigo, and disorders of the alimentary

canal, reciprocally produce each other. Professor Gregory, of Edinburgh, asserts this in the following words: "*Vertiginem nausea solet comitari, alteraque alteram inducere.*"* It is not the present object to inquire into all the species and varieties of vertigo which may be found enumerated in systems of nosology; but whether accompanying the attack of apoplexy, palsy, epilepsy, hysteria, or syncope; whether induced by injuries of the head from external violence, by excessive evacuations, or at the accession of fevers, it is generally attended with sickness of stomach. And, on the other hand, when the alimentary canal is primarily disordered, as in cases of indigestion, taking emetics, drunkenness, swallowing of poisons, gastritis, enteritis, &c. vertigo is generally found to take place. Sea-sickness is, therefore, a consequence of certain sympathies, or associations of motions of different parts of the animal system. And there is ground to conclude, that the vomiting caused by a stone in the bile-duct, or in the ureter, as well as that arising from inflammation of the intestines, or at the accession of fevers, is produced in a similar manner.

If it be admitted that certain organs, or parts of the body, become associated in their actions (and the proofs of such an association continually recur

* Conspectus Medicinæ Theoreticæ, vol. i, p. 145.

in observing the functions of the animal system,) it will follow, that, in a state of health, each organ, or part, in this associated series or circle, has its appropriate share of nervous or vital power. But if one of these organs or parts be subjected to violent or irregular action, as such action consists in the employment and expenditure of nervous power, the balance of the distribution of this power must be disturbed, and while one part expends too much, the others will possess too little. This is obviously illustrated by the appearances of drunkenness. While the stomach is stimulated to excess by fermented or distilled liquors, the muscles of voluntary motion, the optic nerves, &c. are deprived of their share of nervous influence; and hence the inebriate becomes vertiginous, and his limbs refuse their accustomed office. Just so it is with persons unaccustomed to the motions of the water, when they go on shipboard. The excessive, irregular and unusual actions of the organ of sight, expend a disproportionate share of nervous power, and, of consequence, the parts connected with it by association must soon suffer by a deprivation of their proper quantity. The stomach, which possesses more extensive and intimate relations with the rest of the system than any other viscus, will be the first to feel, and afterwards to propagate this morbid impression to other parts of the body.

Attention to the following circumstances will go far to explain the seeming disproportion between cause and effect, in this mode of accounting for the violence of sea-sickness in persons unaccustomed to the incessant agitation of the ocean. 1. The motion is not only unusual, irregular and complicated, but excessive. The movements of the waves, forming a vast expanse of surface, agitated and rolling in a thousand shapes—the diversified movements of the ship, with all its variety of parts and appurtenances—and the movements of the voyager himself reeling and staggering in every direction: all these form an aggregate of agitation sufficient to distract the steadiest head. The contrast between this scene and such as are found on the land, where a great majority of objects are either at rest, or moving with steadiness and regularity, must be apparent to all. 2. The excessive action of the organ of sight, produced by this aggregate of unusual motion, will not appear strange, if the quantity of nervous power expended on the eyes be duly considered. No part of the system, in proportion to bulk, is so plentifully supplied with nerves as the eyes. Each optic nerve is as large as a crow-quill at its entrance into the eye. Besides these, the third, fourth, and sixth pairs of nerves, as well as part of the fifth pair, belong to this organ. The incessant employment and activity of vision, during the day, considered in connection with the size and num-

ber of the nerves devoted to this sense, will evince that the consumption of nervous power in the eyes is fully as great, if not greater, than that bestowed upon the whole of the upper extremities. 3. The intimate sympathy between the brain and the stomach is also to be considered; whereby the disordered actions of the organ of vision, which possesses so large a branch of the nervous system, make an immediate and powerful impression on the stomach, invert its motions, cause profuse discharges of bile, &c. and produce all the train of distressing sensations which belong to sea-sickness.

It is surprising to observe what slight causes will, in some constitutions, produce vertigo. An unusual posture, an inconsiderable elevation from the ground, and even a momentary view of objects moving so as to attract the gaze of beholders, will sometimes excite this sensation. Small modifications of motion will also serve to relieve, as well as to produce it. A lady informed me, that, after constantly suffering nausea for some time, from riding in a sleigh, she was relieved, in the latter part of the journey, by a more harsh and rugged motion, in consequence of the snow suddenly dissolving, and leaving the earth bare. In this case, it is probable that the smooth and almost imperceptible progress of the sleigh, while gliding over the snow, prevented the lady's distinguish-

ing the apparent motions of objects which were absolutely at rest, from the real motions of them; and this confusion seems to have been, at least in part, the cause of her giddiness and nausea. The course of the sleigh over sand, gravel, &c. was a nearer approach to ordinary habits of motion.

It is fortunate for such as are destined to a seafaring life, and to other employments which are apt to produce similar giddiness and nausea, that these affections are commonly of short duration. The dominion of habit, in these cases, is extremely favourable. The Dervises of Turkey, who practise the motion of turning themselves swiftly round as a ceremony of religion, soon learn to perform it without giddiness. A similar habit is acquired among the *Shakers*, a fanatical sect of religionists in the State of New-York. My colleague, Dr. Mitchill, informs me, that he saw a female of that sect turning herself round about sixty times in a minute, for the space of five minutes, without interruption; and this was done without any appearance of her becoming vertiginous.

A question naturally arises on this subject, why some persons are more liable than others to vertigo and nausea, in consequence of unaccustomed motions? This is the result of a greater promptitude, in some constitutions, to run into sympa-

thetic or associate actions. It is not easy to assign the reason why movements of the animal system, which have once occurred in succession or combination, should afterwards acquire a tendency habitually to succeed or accompany each other. It is a property of animated nature, and distinguishes this department of being from others. There seems to be a peculiar temperament, consisting in the too great facility with which fibrous motions acquire habits of association, and in the strength with which these associations are maintained. In constitutions of this sort, sympathy acts with more certainty and energy, and to much greater extent, than in others. And it is probable that such persons are much more liable than common to all the class of sympathetic diseases. For example, it might be expected that such would be peculiarly disposed to the attack of intermittent fevers; that the periodical return of paroxysms, in these cases, would be more difficult to arrest; and that they would be liable to recur, from slight causes, for many weeks after they had appeared to be cured. The force of memory seems also to depend upon the possession of this temperament; for memory is understood to mean facility and strength in forming and retaining associations. It would be matter of curiosity to ascertain, whether persons of retentive memory are more liable to fevers, to sea-sickness, and to all the various diseases of association, than others.

TREATMENT OF SEA-SICKNESS.

Having thus endeavoured to describe the appearance of sea-sickness, and to assign the more probable causes, I proceed, in the next place, to the treatment of the disease.

Much may certainly be done towards the prevention of this disorder. It has been proposed, that persons intending to go to sea should, for some time previously, accustom themselves to swinging, or to some other unusual motions adapted to induce giddiness. The exercise of turning round upon one foot would probably answer this purpose as well; and it may be acquired, after some practice, so as to be performed entirely without vertigo.

Sea-sickness, like many other diseases of association, is greatly under the dominion of emotions and passions of the mind. By forcibly directing the attention to a particular object, the nausea may be relieved, at least for a short time. By joyful or alarming news, by the terrors of a storm or of shipwreck, by the prospect of battle, and by violent pain, such as the anguish of a broken or dislocated bone, the disease may be instantly arrested. But as such degrees of emotion and pain cannot safely be excited on many occasions, and

are not susceptible of measure or regulation, they are obviously unfit for practical purposes.

It has been asserted, that keeping the eyes shut or covered, if begun immediately upon embarkation, will prevent sea-sickness. According to the principles maintained in this paper, such an expedient cannot be without use. In a short passage particularly, lying horizontally, sitting or standing, so as to be firmly and steadily supported in one position, with the eyes, for the most part, shut, is by no means impracticable, and deserves to be strongly recommended. I am informed, by a gentleman of observation, that, while at sea, he enjoyed almost total exemption from this complaint during the darkness of the night, and while he lay horizontally, with his eyes closed, but always experienced a return of it the next morning, as soon as he arose, and began to look at surrounding objects. All agree that it is proper to avoid watching or gazing at the waves, especially when they are strongly agitated by tempest.

The proper management of diet will do much both in the prevention and cure of this disease. It is advised to eat moderately and frequently, to avoid every thing calculated to produce indigestion, and to select such articles as the stomach can digest with the greatest ease, expedition and certainty. For this purpose mariners recommend

bread and fresh meat to be eaten cold with pepper; but the occasional use of salted meats will not be found hurtful, and sometimes they undoubtedly deserve a preference. Some contend, that keeping the stomach constantly full, by eating biscuit, &c. is one of the best preventives; and it is not improbable that the stimulus of nutritious and well-adapted food, combined with the stimulus of distention, may be so adjusted as greatly to fortify the powers of the stomach. For drink, it is recommended to use liquids impregnated with the vegetable or carbonic acids—such as lemonade, seltzer-water, sound malt liquors, cider, champaign, &c.

The sea-sick are advised to keep much upon deck, even in all varieties of the weather. It is also enjoined upon them to take brisk exercise, such as assisting at the pumps, or any other active employment, with as little intermission as the nature of the case will allow: for it has been generally remarked, that indolent and slothful passengers are most apt to suffer from this complaint. Governor *Winthrop*, in his *Journal*, mentions the efficacy of exercise, on a voyage, as a remedy for sea-sickness, in the following terms: "Our children and others that were sick, and lay groaning in the cabins, were fetched out; and, having stretched a rope from the steerage to the mainmast, we made them stand, some on one side and some on

the other, and swing it up and down till they were weary, and by this means they soon grew well and merry."*

As sea-sickness is undoubtedly a disease of association, and, in that respect, akin to the nature of fevers, it is probable that the stimulant and invigorating remedies employed to repel the attack, as well as to prevent the recurrence of the paroxysms, of intermittent fevers, might also be successful in guarding the stomach against the invasion of this complaint. The Peruvian bark and other bitters would be likely to answer this purpose. And after the actual attack of the disease, if great prostration of strength and exhaustion ensue, these remedies, combined with wine and opium, as in fevers of debility, should be assiduously used.

Preserving regularity of the intestinal discharges, and occasionally exciting some degree of artificial diarrhœa, will form an important part of the treatment. The aloetic preparations are among the most suitable of the cathartic class. If acidity be troublesome, as often happens to the feeble and dyspeptic, magnesia will become necessary. Injections of sea-water and soap are always convenient, and deserve to be very frequently employed.

* Winthrop's Journal of the Transactions and Occurrences in the Settlement of Massachusetts, &c. page 6.

It is probable the injection of cold water, or iced water, which, according to Monsieur Pomme, so instantaneously relieves the inverted motions of the alimentary canal in hysteria, would likewise prove an efficacious remedy in this case. (See Pomme Des Affections Vaporeuses, p. 25.)

As the stomach and skin are very strongly associated, the former may be often excited into action, and supported, through the medium of the latter. For this purpose the sea-sick may use the warm bath alone, or alternated with cold bath, friction of the skin with oil and camphor, or dry, with powder of mustard: to the epigastric region they may apply plasters, epithems or cataplasms charged with aromatics and opium, and, in severe cases, sinapisms or blisters.

Compression of the abdomen, by means of a bandage or handkerchief, is recommended by seamen, and, there is reason to suppose, on good grounds. The savages of North-America, when restricted to scanty food, and pressed by hunger, fasten a belt round their bodies: by this they give support to the empty and enfeebled stomach, and thereby provide a substitute for the stimulus and distention of food. When the stomach has been long harassed with the retchings of sea-sickness, this mechanical aid will assist in sustaining the

system until it becomes habituated to its new situation.

It will seldom be requisite to combine many of these remedies in the treatment of a single case. For the most part, relief is easily and speedily obtained, and the common method may be delivered in a few words: When nausea comes on, and cannot be subdued by mental exertion, the patient should place himself in a horizontal position, shut his eyes, and lie perfectly still. If vomiting succeed, he should take some draughts of an infusion of chamomile, peppermint or ginger, or something similar. Sea-water is commonly recommended by mariners. When the stomach has been thoroughly emptied by the assistance of such drinks, it becomes necessary to use some grateful stimulant. I am informed, that on board of the packet-boats plying between the British ports and those of the adjacent continent, for the conveyance of passengers, that spiced wine is the common remedy. Where this fails, recourse may be had to small doses of sulphuric (vitriolic) ether, frequently repeated, till it compose the stomach. Small doses of opiates should also be tried. The effervescent mixture of Riverius, seltzer-water, lemonade and warm punch, will succeed in some cases. But if the disease, notwithstanding, should obstinately continue, the stomach be harassed with incessant retchings, and exhaustion and debility

take place to an alarming degree, it will be requisite to adopt the treatment usually pursued in low fevers of debility. Preparations of Peruvian bark, or rather of columbo or quassia, with wine and opiates, or ether, employed in rotation, and periodically repeated, so as to sustain a moderate and equable excitement of the stomach, will especially claim attention. And, in such extreme degrees of the disease, the other remedies above mentioned may likewise be selected or combined in such manner as to suit the exigences of the particular case.

It is often necessary to attempt the cure of one disease by exciting another. With this view phthisical patients and others often are sent to sea. Instead of inquiring into all the circumstances of a sea-voyage which may prove beneficial in such diseases, it will be sufficient for the present purpose to consider the affection of the stomach as one of the chief means of relief. The instances of the efficacy of this remedy are too numerous and remarkable to admit of a doubt. But it has happened, in many cases from some peculiarities of the stomach or constitution generally, that the usual nausea and vomiting have not occurred, or have been so slight and transient as to disappoint every hope of advantage from the voyage. If the efficacy of this remedy really depend upon the ex-

citement of nausea and vomiting, it is much to be regretted that such a disappointment should take place; as it seems always to be in the power of the voyager to increase the force and duration of the nausea, by artificial means, to any desirable extent. Swinging, in one form or another, may conveniently be employed in aid of the marine vertigo. If the oscillating or pendulum-like swing should not prove sufficient to create the requisite degree of vertigo, the patient might be whirled in a chair suspended from aloft by two parallel cords hanging near to each other, which, after being circularly revolved fifty or one hundred times in one direction, would return with great velocity in the other. Or, if the debility of the patient should not allow this kind of motion, a small bed, affording room to lie in an easy position, might be suspended to a simple machine adapted to whirl it with any proper degree of gentleness or velocity. By some of these means, varied in such manner as to suit the circumstances of each particular case, there can be no doubt that vertigo might be increased and regulated at pleasure.

In other cases, likewise, besides phthisis pulmonalis, the marine nausea might be usefully augmented by additional unaccustomed motions. The noted example of its efficacy, mentioned by Mr. John Hunter, in causing the matter of a large bubo to be unexpectedly absorbed, is a proof of

great power in promoting the action of the lymphatic vessels. The use of emetics, in chronic diseases, might, perhaps, be entirely superseded by sea-sickness, properly assisted and regulated by some of the other means of exciting vertigo.

REMARKS

ON THE

CHOLERA, OR BILIOUS DIARRHŒA

OF

INFANTS.

REMARKS, &c.

THE cholera of infants forms one branch of a large stock of diseases, as much distinguished for the universality of their appearance, as for the diversified character they occasionally assume. Another form of them, more familiarly recognised by the public, is that of remittent and intermittent fevers. On account of circumstances, which every body is acquainted with, they have attracted, for several years past, much more attention than usual. Views of the subject, more comprehensive and accurate, have enlarged the number of them, by bringing back to their proper station many diseases, formerly so much disguised in external appearances, as to conceal the fact of their radical relation. And it will not be surprising, if

this simplification should be carried much farther; nor if our successors should group together a still larger assemblage of diseases, and demonstrate their origin from one common cause.

Notices of the cholera of infants are to be found in almost all the writers who record the annual epidemics of summer and autumn, in sickly countries. Cleghorn, in his account of the diseases of Minorca, describes it exactly as it appears in the United States, invading children some weeks sooner in the season than similar affections are discovered in adults; which he properly ascribes to their greater excitability, and to the remarkable tenderness of the alimentary canal in the infantile system.

The importance of the subject now undertaken is admitted by every physician. For, notwithstanding the nature of the disease is, at present, well understood, and the treatment greatly improved, it still continues, particularly in the southern and middle States, to destroy multitudes of infants, and even, in more favourable cases, to prove, in a high degree, obstinate and distressing.

An interesting account of the cholera of infants, by Dr. Rush, has been many years before the public.* His description of it is so accurate, that,

* Medical Inquiries and Observations, vol. i, p. 112.

after much attention to the disease, I am unable to add any thing which, in that respect, deserves to be considered as important. His account of the nature and causes of this complaint, of the relation it bears to some others, and of the mistakes that have prevailed on this point, is so just, that it has been commonly adopted. The mode of treatment he recommends is very judicious, and has been generally received. But, as this valuable book is in the hands of almost all our medical practitioners, it would be an abuse of their time to repeat these things here. I shall not, therefore, attempt to give any history of the disease, nor propose any general plan of treatment, or any minute detail of remedies. My observations will be confined to a few detached points, which appear to me to be important; and they will be often so irregular and desultory, that this paper can be considered, at most, only as a brief supplement to former essays on the same subject.

The physicians of the United States seem generally to concur in opinion, that a retreat from an unhealthy situation, and particularly a change from the air of cities to some salutary part of the adjacent country, is one of the best means both to prevent and cure this disease. The evidence in favour of this opinion is such, that we shall take it for granted, and only propose the application of the

treatment we have in view in cases where the change of air cannot be obtained.

It is well known, that the situations and circumstances of a large proportion of the community are such, as necessarily to fix them in the spot where they happen to reside. In this case, the best exertions must be made which the nature of the affair will admit.

As the first indication which presents itself, in the treatment of this disease, is to discharge the stomach and intestines of their acrid and offensive contents, great difficulty often occurs in the outset, as to the choice of the means to effect this purpose. When the stomach is excited into action so inverted, convulsive and violent, the administration of emetics will be often thought hazardous. And if a thorough evacuation of the offending matter shall appear to have been already accomplished by spontaneous vomiting, or if the disease shall have invaded with great violence, and already have produced great prostration of strength, feebleness of pulse, and a receding of heat from the extremities, an emetic would certainly be improper and unsafe. The violent action of the stomach should always be suffered to subside before such a remedy as this can be attempted with propriety.

But however mischievous the rash interposition

of this remedy may often prove, the maxim that vomiting should never be employed to relieve vomiting, has been sometimes maintained in a sense far too general and unqualified. Mild emetics, which soon cease to operate, will often leave the stomach stronger than before. This is attributed, by Dr. Darwin, to the accumulation of excitability during the stomach's inverted action.* It may also, perhaps, be in part ascribed to the difference in the modes of action, which take place in spontaneous and in artificial vomiting.

To relieve, however, any doubt on this subject, whenever the state of the stomach and intestines is found to require evacuation, a more safe and unequivocal means of effecting the purpose, it is conceived, may be found in the use of calomel, accommodated in its dose to the age of the patient, and to other circumstances. And as long as mere evacuation can be requisite or admissible, this medicine, uncombined, will prove efficacious, gentle and safe. As soon as the profuseness or sufficiency of the discharges, or symptoms of debility, admonish to support the strength, the addition of opium to the calomel, in suitable quantity to compose the stomach and bowels, forms, in my judgment, one of the most powerful remedies ever employed in this disease.

* Zoonomia, vol. ii, p. 57.

To recommend the trial of mercury, alone or combined with opium, as different states and exigencies of this disorder may require, is one of the principal objects of this paper. A case of infantile cholera, very violent and protracted, attended with dysenteric symptoms, first induced me to make trial of this remedy, according to Dr. Clark's plan of treating chronic dysentery.* It succeeded so completely, that I soon extended the use of it to the bilious diarrhœa of children; and here it answered as happily as before. Some of my medical friends have since made trial of it, and, they assure me, with singular advantage. If with others the same benefit should result, it will certainly not be thought unworthy of being recommended to the public; and, if future experience should find me too sanguine in my estimation of this medicine, this brief paper will, at most, add but little to the mass of hasty and injudicious encomiums bestowed on favourite remedies.

As to the dose of this medicine, or the interval of repetition, it is difficult to speak with precision, considering the variety of circumstances which must always determine questions of that sort. It will, perhaps, convey an idea, sufficiently explicit, of the mode of exhibiting this remedy, to observe, that from an eighth part of a grain to one grain of

* Diseases of Hot Climates.

calomel, combined with a portion of opium, from a twentieth part of a grain to half a grain, repeated every, 2d, 4th, 6th, or 8th hour, will comprise nearly all the range of variety necessary in the treatment of this disease, in order to accommodate the medicine to all the circumstances of age, constitution, and habit, as well as the endless differences in the state and degree of the complaint, in the concourse and succession of symptoms, &c.*

It will scarcely be necessary here to observe, that not only the relative qualities of these ingredients require to be continually varied in order to meet the ever-varying circumstances above mentioned, but that frequently one or the other article should be entirely omitted, accordingly as evacuation or astriction of the alimentary canal, or greater or less degrees of either, may be held in view.

The form of pill was commonly preferred, in prescribing this medicine. If the child was too

* To be more particular—a child about two years old may take a pill composed of one sixth part of a grain of opium, and one third part of a grain of calomel, every second, fourth, or sixth hour, or sometimes oftener, according to the urgency of the symptoms. If much evacuation be wished, the above quantity of calomel is too small; if much astriction be desired, and the intestines be very irritable, it will be too large. And so also, vice versa, with respect to the opium.

young to swallow an entire pill, it was directed to be broken into small fragments, and given in any pleasant vehicle, liquid enough to be readily taken without adhering to the mouth, and of sufficient consistence to entangle the small pieces of the pill. When it was necessary to depart from this mode, the addition of a little white sugar, and of a small portion of some aromatic, easily formed powders of a convenient size.

The following advantages seem to attend the use of this medicine.

1. The facility of exhibition. Neither article, when properly enveloped, is nauseating—the smallness of the bulk, and the agreeable form into which it may be reduced, remove every difficulty. The trouble of giving unpalatable remedies to children is experienced every day ; and the trouble increases with the bulk. Impressions on the senses frequently affect the stomach, especially when enfeebled by disease ; hence a disagreeable taste or smell will sometimes so instantaneously produce the rejection of an article attempted to be swallowed.

2. The difficulty of dislodging it from the stomach by the utmost violence of vomiting. The great specific gravity of the calomel seems to favour the retention of the opium, as well as of itself, on the stomach.

3. By this combination, much more of each ingredient, active and powerful as they always are, can be safely and advantageously given, than in a separate state. They evidently correct, regulate, and soften the powers of one another.

4. It is calculated to obviate the most fatal tendencies of the disease. When a fatal termination takes place at any other than a very early period, there is ground to conjecture that effusion in the head, or destruction of the organization of the stomach or bowels, commonly takes place. The symptoms of determination to the head render the former probable; and the inflammatory, dysenteric, and gangrenous appearances leave little doubt of the latter. That mercury is well adapted to prevent consequences such as these, will be readily agreed.

5. Calomel, combined with opium, and especially when exhibited in small doses, excites a strong absorbent action, with respect to the fluids poured into the stomach and intestines. Most of the metallic salts possess more or less of the same power. The degree of absorption effected by the combination of calomel and opium, will probably be in proportion to the quantity and completeness of the evacuations previously made by the calomel alone, or other evacuative means; as absorptions in general are increased by inanition.

It will be difficult, we conceive, to appreciate the virtues of calomel in the cholera of children, unless we hold in constant view the quantity, vitiation, and acrimony of the contents of the stomach and bowels. When the intestines are so enfeebled and diseased, a diarrhœa may be present for many days, even for weeks; and yet excrementitious matters may collect and remain in such quantity as to produce the greatest mischief by their putridity and excessive stimulation. In what manner shall we venture to expel this matter? Physicians generally agree, that calomel, though commonly safe and gentle in operation, is the most penetrating, detersive, and effectual of all the means employed to cleanse the intestinal canal; that it dislodges substances not to be moved by other purgatives; and often discharges more bilious and other acrid matter of every description at one, than other cathartics at several evacuations. It results then from all this, that in calomel alone, we possess an excellent evacuant in the diseases denominated bilious; and that in calomel, joined to opium, we have a medicine of still higher value.

Cases may, perhaps, occur, of such irritability in the alimentary canal, that no portion of calomel can be borne, even in connection with opium. Such cases, indeed, we have not yet met with; but supposing them to happen, we should advise, without hesitation, the external application of mercury.

Upon the whole, we think ourselves warranted in ascribing a superior efficacy to the action of mercury and opium, in the cholera of children. The common mode of treatment appears comparatively superficial and palliative; and, of consequence, the effects of it are transient; while mercury, penetrating to the inmost recesses of the disease, and disarming it of all malignity, effectuates a cure, at once radical, durable, and complete. Opiates alone, so generally used, and so much confided in, afford only a short-lived, delusive repose in this tumult of the system.

If it were necessary to fortify, by authorities, the mode of treatment here proposed, it would be sufficient to mention the names of Doctor Cleghorn* and Dr. Clark,† who place a principal reliance on a combination of calomel and opium, in the worst forms of dysentery. Doctor Lysons‡ relates a number of cases of the efficacy of a similar composition in the bilious diarrhœa of adults. Dr. Chisholm§ depended chiefly on the same medicine, given in such manner as to produce a rapid ptyalism, in the malignant fever of Boullam. Doctor C. Smith employed the same combination to relieve the formidable symptom of vomiting, and

* Diseases of Minorca.

† Diseases of Hot Climates.

‡ Practical Essays.

§ Essay on Malignant Fever of Boullam.

found it successful, when all other means had failed, in the jail distemper.* And Doctor Armstrong used, with signal advantage, a composition, substantially the same, in the disease of infants, which he denominates the *watery gripes.*† The efficacy of mercury, also, in the malignant fevers of our own country, within a few years, is, I presume, too well known to need being mentioned in this place.

In the advanced stages of the cholera of children, the virtue of alum deserves much commendation. All acrid and offensive matter should, as much as possible, be removed before the use of it be attempted. It is thought a necessary caution to begin with it in very small doses, as half a grain, conjoined with opium, and gradually to increase them. It possesses the great advantage of small bulk, and of easy envelopement in a pill.

To the preceding observations we now proceed to subjoin some remarks on the management of the state and temperature of the skin in this disease. It would be difficult to point out any branch of medical attention so much neglected as this has too generally been. The importance of it, in all febrile diseases, is unquestionable. In the principles, however, which ought to guide our con-

* Description of Jail Distemper, p. 126.

† Diseases of Children, p. 45.

duct on this point, we are still sorry to find too much indefiniteness and ambiguity. And although we are persuaded many firm and decisive steps may be taken beyond the common practice at this time, we are not, at present, prepared to state the limits, or deliver the rules which should invariably govern this subject.

As the cholera of children is a febrile disease, and the surface of the body, often heated far beyond the proper point, it will be advisable to expose all such parts of the skin as feel too warm to the hand, to a stream of cool air, or to bathe them in cool water. Several times a day the patient should be washed with vinegar and water, salt and water, or water alone, by means of a sponge, as he lies in bed, with as little motion, disturbance, or fatigue, as possible. Considerable inequality, as to the heat of different parts of the body, is often observed. If some parts, as the extremities, be too cold, they should be covered with flannel; if other parts, as the face, breast, &c. be too warm, they should be cooled by a stream of cold air, or by bathing them, as before directed.*

As to the temperature of the water to be employed for this purpose, there must be much latitude of discretion in different circumstances, as there will be much diversity of opinion in the

* Darwin's Zoonomia, vol. ii. p. 218.

same circumstances. We believe it may be safely affirmed, that any temperature of a bath, at, or a few degrees below, the healthy standard of heat, in the human body, will produce a speedy and considerable abatement of febrile heat on the skin. And we have direct conclusive experiments to prove, that such a bath, from 95 to 85 degrees of Fahrenheit's thermometer, when duly applied to the skin, morbidly hot, will powerfully diminish the celerity of the pulse, and the heat of the body. But, wherever these tepid or cool degrees of the bath do not sufficiently carry off the heat, the use of colder water should certainly be enjoined; directing the successive reductions of temperature to be gradually performed. And in cases where a determination to the head is indicated by unusual heat of that part, by turgescence and redness of the face, redness of the eyes, delirium, &c. the coldest water should be applied; and, if this fail, powdered ice in a bladder, as recommended by Dr. Rush in yellow fever.†

It would require much detail to enumerate all the advantages of these applications. Besides obviating dangerous determinations, and affording great refreshment, they save a great expenditure of excitability, and thereby preserve, from an unavailing and noxious waste, such a portion of vital power, as may become extremely important in the

† Medical Inquiries and Observations, vol. iv, p. 91.

perilous, doubtful, and protracted struggles of the system with this disease.

It would be improper here to pass without notice the efficacy of cold water, or iced water, as the severity of the case may require, injected into the bowels. This operates powerfully, as an anodyne, sedative, and antispasmodic. Besides actual experience, a striking analogy in favour of this remedy is presented by the instantaneous relief it affords in the retrograde motions of the alimentary canal, which take place in hysteria, mentioned by Dr. Darwin as recommended by Monsieur Pomme. Dr. Darwin explains the relief produced in this case by supposing "the inverted motions of the intestinal canal to be checked by the torpor occasioned by cold; or that one end of the intestinal canal may become strengthened, and regain its peristaltic motion by reverse sympathy, when the other end is rendered torpid by ice water." This remedy, though generally advisable, appears to be most adapted to that period of the disease, when the alimentary canal has been previously well emptied of its acrid and offensive contents.*

* The Spanish physicians (says Cleghorn) have often assured me, that they found nothing more beneficial in violent deplorable choleras, than drinking of COLD WATER. The same practice is recommended by many of the ancients.

Sin autem omnia antiqua stercora dejecta fuerint, et bili-

In addition to the common applications to the epigastrium, or other convenient parts, blisters are well adapted to effect a change in the state of the alimentary canal. If the propriety of applying them in the early part of the disease be doubted, they must be thought unequivocally proper, after the canal shall have been emptied of its impurities, and the skin become generally cooler and paler than at the beginning. Sinapisms would probably answer very well in many cases; they are less painful and troublesome than blisters; and, if not suffered to lie on too long, will produce no disagreeable effects.

When the disease is sufficiently subdued, and the retentive powers of the stomach re-established, it will be necessary to have recourse to the common corroborant remedies of the vegetable kind. Among these, none have succeeded so well, in my hands, as infusions or decoctions of Columbo root, or Angustura bark.

osi humores transierint, biliosusque vomitus et distensio adsit, fastidium, anxietas, virium labefactio, tunc frigidæ aquæ cyathi duo aut tres propmandi sunt ad ventris astrictionem, ut retrogradus humorum cursus cohibeatur, atque stomachus ardens refrigeretur. Assidue vero id, quum potam aquam vomuerit, facito. Aret. Cappad. de curat. M. A. l. ii. c. iv. See likewise Cæl. Aurel. de morb. acut. l. iii. c. xxi. Cleghorn's Diseases of Minorca, p. 243.

FINIS.

Date Due

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